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THE VETERINARY PROFESSION AND ITS PART IN THE WELFARE OF LIVESTOCK*

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Throughout over 25 years' experience in veterinary work, although most of the time has been spent in research into diseases of domestic animals, I have kept in close touch with veterinary practitioners in different parts of the country.

The veterinary practitioner as I know him to-day is a different person from what he was, as I remember him, a quarter of a century ago. That a change—and a great change—had to take place during that period was inevitable for the conditions under which he has had to work have altered. The practitioner must, therefore, fall in with these changing conditions. He must be prepared to amend his general attitude towards the type of work he must undertake to be of maximum service to the agricultural community and owners of different types of animals who, in their turn, must be educated to the fact that the veterinary practitioner can guide them in maintaining the health of their stocks as well as controlling disease.

Veterinary surgeons to-day are practising their art of surgery and medicine as satisfactorily as they have ever done. They are moving with the times and are adopting new methods of treatment as they become available and are proved successful. It has been of much interest to observe how many veterinary practitioners can discourse at length on some of the most modern methods of treatment in human medicine and how they are being applied to animals. The work which veterinary practitioners must carry out does not end, however, with the treatment of affected animals. Methods of prevention of disease and the maintenance of animal health are of the utmost importance.

It would seem that the word " veterinary " is largely associated with the term " disease." It has been a matter of difficulty to drive home the fact that a veterinary surgeon can be of any assistance in advising on the welfare of animals except from the point of view of " disease." It would seem that the cause of this condition of affairs lies in some measure at least with the profession itself because there has been a tendency to narrow its activities to the treatment of disease and the profession has not always found itself in the position to accept responsibility for the much broader aspect of its work—*viz.* the maintenance of health. The study of that subject has largely been left to others and the organisation of the necessary services for the advising of animal owners has largely fallen into other hands. It may be claimed—and no doubt with some truth—that this state of affairs is now being remedied and that we are becoming more and more " health minded." I would ask, however, are we as a profession taking the amount of interest in this subject of health, consistent with our calling as veterinary surgeons or are we still content to leave much of the information on the subject to be imparted to the animal-owning community by others ? The questions of health and disease are so closely bound together that we can never afford to neglect the one or the other in our daily routine. It is equally true, of course, that those who study animal husbandry and attempt to devise new and more economical methods of feeding, housing, etc., for livestock should never make deductions from their observations unless they are assured that their lines of treatment have not led to a deviation from the " health " of the animals concerned : this can only be ascertained by conjoint work with members of our own profession whose experience and keen powers of observation can detect whether or not freedom from " disease " has been maintained.

Advances in Veterinary Science

When one recalls the state of our knowledge 25 or more years ago, one must be forcibly struck with the progress concerning our understanding of disease and its prevention. It must be gratifying to us as a profession to realise that much of the progress has been the result of the work of our own veterinary colleagues or of the application to animals of the results of study of members of allied branches of science, by ourselves. The broadening of the basal scientific training of our students has been productive of the finest results. It has resulted in the acquiring of a deeper fundamental knowledge of physiological processes generally and of the methods to be undertaken in the enquiry into a disease problem, of an appreciation of the meaning of many of the more academic types of research and the objects they have in view and of the methods of application of findings of general scientific research to the more particular problems of animal health and disease. The opportunities for students of veterinary science to broaden their knowledge and outlook has been greatly increased by the opportunities afforded them by the Universities to obtain degrees while pursuing their normal studies. The awarding of post-graduate scholarships enables the student to become still more closely associated with the detailed work in progress in other scientific spheres. The introduction of

*Address delivered to the Scottish Metropolitan Division of the National Veterinary Medical Association and to a series of meetings of the Society of Veterinary Practitioners (Division, N.V.M.A.) during recent months.

graduates in other sciences into the veterinary profession is also of much importance.

It may be of interest to refer to some of the advances concerning animal health and disease which have been made during the period under review. They are numerous and only a few of the more outstanding can be mentioned.

Regarding horses, it appeared as if they would gradually disappear from the place they held in the work of the country. The result is that problems concerning their health and disease may have been, in some measure, neglected in recent years. Advances of definite value, however, have been made. Surgery has been so improved that major operations are now carried out which would never have been contemplated years ago. The use of anaesthetics in general practice is now a daily routine. The use of X-rays as an aid to diagnosis in diseases of bone and allied structures is comparatively new and though every practitioner cannot possess the necessary apparatus, he has now the opportunity of making use of this means of diagnosis. The protection of horses against tetanus has been simplified so that the conferring of an active immunity can replace the use of antitoxin. The use of tetanus toxoid in creating such an immunity can be appreciated in war-time. It may be that the veterinary officer of the future will see little or no tetanus, if the authorities adopt this simple and inexpensive method of protection.

The observations on the association of various types of diseases of bone and other tissues with the nervous system may lead to a fuller and clearer understanding of the cause and the remedy for some of the old-standing complaints which most of us have to meet. Experiments carried out on the effect of imbalance of some of the essential mineral and vitamin content of everyday horse feeding will, doubtless, lead to a clearer understanding of some of the more obscure diseases and enable the practitioner to advise on this subject.

Sterility in mares has been the subject of research in recent years. It would appear that in this country we had failed to recognise its importance and left the investigation of its causes to veterinary surgeons and others in different parts of the world. Recent work has clarified the position considerably as far as mares in this country are concerned. We now have a fuller understanding of the various causes and the remedies for its control.

Concerning cattle, I think we are justified in claiming that much of the recent knowledge of the methods of controlling their various diseases is the direct result of work carried out by members of our own profession. One wonders, however, if the maximum use is being made of the available knowledge. It is true that the results, in some cases, are being applied. The use of calcium in the treatment of milk fever is an example. Incidentally, it may be noted that the study of the metabolism of minerals by the milking cow is still far from complete. Contradictory results are recorded from time to time so that our ideas become confused and we may feel at a loss how to advise our clients on some of the diseases obviously associated with mineral metabolism. More recent research work on trace mineral elements indicates that our knowledge is far from complete concerning their relationship to the maintenance of health and their association with disease processes. Biochemistry—a comparatively new science in its application to the lives of stock—must form one of the basal sciences to which we must look for assistance in these subjects.

Contagious abortion is probably one of the most prevalent diseases affecting cattle. Its presence not only concerns the loss of a calf but the lower milk yield and the various secondary affections, resulting in a high incidence of temporary or permanent sterility, are of even greater importance. One of the earliest methods of control is still practised, the use of live *Br. abortus*. Experimental observations show that the development of immunity to the disease depends largely on the presence of live organisms. Dead cultures do not appear to be effective in its control. The use of virulent cultures cannot be defended on any pretext; the risk is much too great. The experiments with non-virulent living cultures carried out in America and to a limited extent in this country are, however, encouraging and we can, I think, look forward with a fair degree of confidence to a more general application of the method. In the meantime, the identification of " carrier " cattle by the application of the agglutination test and the adoption of isolation methods are, in selected cases, controlling the disease. The success attending this method depends largely on the conditions available for isolation and the prevention of the re-introduction of infection.

When discussing diseases of cattle recently with some agriculturalists the opinion was expressed that mastitis in milking herds was one of the more serious diseases of cattle. In some districts this would seem to be the case. We have now much information on its causes and control. In mastitis we have a disease which can be controlled to a considerable extent by simple measures concerning which the practitioner must play an important part. The affected and carrier cows must be diagnosed and contact, direct or indirect, between them and the healthy animals must be prevented. For this work the laboratory is essential. The practitioner cannot make an accurate diagnosis of the cows carrying the various types of streptococci but when the result of the examination of the milk samples is established, the whole control of the disease is largely in his own hands. It is my opinion that the time has now arrived for the putting into practice of this method of control in herds which are suitably placed for its adoption and on as large a scale as possible. It may not be possible or advisable to attempt the control of mastitis in every herd but there must be many herds throughout the country which lend themselves to the necessary treatment. The veterinary practitioner must be the key man in such work, for not only must he advise his clients and ensure that the control measures are properly carried out—he has also to undertake the treatment of the affected animals under his charge.

Tuberculosis in cattle has been the subject of control for a number of years. Unfortunately it has been found necessary to suspend some of the schemes throughout the country. It simply means that we shall stand more or less where we are for a period. It means, further, that the veterinary practitioner cannot be used to the extent that was at one time visualised. It was indeed gratifying to know that the practitioner was participating in the eradication schemes and it is to be hoped that he will continue to be used more and more as time goes on after the period of retrenchment. This is not the time, nor the place, to discuss tuberculin but I cannot let the opportunity pass without emphasizing once more that no scheme for the eradication of tuberculosis in cattle can hope to be successful withou

the use of a tuberculin of such a maximum potency that it will detect the greatest number of reacting animals in the hands of all users. Tuberculin must be standardised. Not till such control is carried out can we expect results which cannot be challenged.

In many breeding districts, sterility is prevalent. As with the condition in mares, we now have a fairly clear understanding of some of the important causes and methods of control. They are sufficient to enable the veterinary practitioner to be of a real service to agriculture.

Our knowledge of diseases of sheep has improved greatly during the past 25 years. After many controversies between members of our profession and others on the cause of some of the prevalent diseases, their true nature has been clearly demonstrated and methods for their control have been devised. Till the necessary investigations were made, sheep farmers seldom consulted a veterinary surgeon. It cannot be claimed, of course, that we understand fully the control of all sheep diseases. In various parts of the country many ewes have suffered during the past spring from pregnancy toxaemia and the death rate has been high. Research work is pointing to the cause but we have still some way to go before we can advise on general methods of control. But I have only to mention diseases such as louping-ill, braxy and lamb dysentery to recall conditions which yield readily to control measures. The general subject of entero-toxaemia can be said to be well in hand. It must be pointed out that to the veterinary profession belongs the credit for our present knowledge on anaerobic diseases generally. It may be that our work will be shown to have results reaching much further than in the control of sheep diseases in this and other countries.

The position concerning pigs is not quite so happy. Our lack of knowledge concerns largely the non-specific diseases, most of which are intimately associated with nutritional problems and to some extent with housing. Some of the specific diseases are well understood and methods of control are being practised. Research work on the feeding and housing of pigs has been in progress for some years. Here I would like to give a word of warning. Many of the experiments have been carried out without due attention having been given to the fundamental effects of the various treatments on the health of the animals. We cannot ignore the fact that economic consideration demands altered methods of feeding, housing and general husbandry. But we must not lose sight of the fact that no matter how much it is necessary to make such alterations, no system can be of any value unless the general health of the animals can be maintained. It is useless to carry out experiments on a few selected animals and to apply the results on a general scale in the hope of obtaining the same results under all conditions of management. We, as a profession, must work side by side with the various observers and play our part in the tests and trials, keeping before us all the while the important questions of health and disease.

Many of the remarks I have made concerning pigs also apply to poultry. One has seen so often the results of small-scale feeding experiments on selected fowls applied to the industry generally, with unhappy consequences.

Poultry diseases have been studied largely by members of our profession during recent years and it is gratifying to be able to record that good progress has been made. Many of the highly infectious diseases are completely understood and can be controlled. The veterinary practitioner can be of real help to the poultry industry. It is true that much of the work on poultry has become specialised and that laboratory services are indispensable in the diagnosis of diseases. You will remember the stand this profession has taken concerning the Government schemes for improvement in the health of poultry stocks throughout the country. You will also remember how " refresher courses " were instituted in many districts. There seems little doubt that the veterinary practitioner will be called upon to carry out his share in the conservation of the health of poultry in this country when the Poultry Industry Bill is finally brought into being. Meantime research work continues, especially concerning that prevalent and destructive disease, fowl paralysis. Our knowledge of its nature is becoming more accurate and eventually methods for its control should be forthcoming.

(I have purposely omitted references to advances concerning diseases affecting dogs and cats.)

Animal Husbandry

Let us now consider the relationship of veterinary practitioners to the subject of animal husbandry. I feel sure that but few of us can claim a first-hand acquaintance with the many aspects of this vast subject. The veterinary surgeon, I submit, should be in a position to-day to advise the agricultural community on the various methods of practising animal husbandry, particularly on the conditions pertaining in any district or even on an individual farm. I do not hold that none but veterinary surgeons should carry out experiments and observations concerning methods of feeding, housing and husbandry generally, but I do hold that the veterinary profession must play its part in such investigations and, further, that practising practitioners should be conversant with the latest information on the subject. It happens too often, I fear, that veterinary surgeons only receive second-hand information of some of the important practical results of investigations by others and that the farming community may at times be more conversant with them than is the person who should be his adviser. To my mind there are several remedies for this state of affairs :—

(1) The veterinary profession should be in a position to carry out its own investigations into the various aspects of the subject. The time for such a monopoly of research is long past, though in the opinion of some, it may have been advisable. I do not agree that it ever was, or ever will be, advisable to have all the researches into animal husbandry confined to our professional colleagues.

(2) The veterinary profession should be in a position to participate in experiments on animal husbandry. I think we can say now that we are in a position to do so and collaboration is now taking place. Such work entails the study of the subject from several angles and demands the collaboration of those trained in different branches of science. One is tempted, of course, to say why not train our own colleagues and allow them to do the necessary work? Veterinary surgeons are specialising in the various branches of science and the time will, I hope, be reached before very long when we shall have a number of men and women conversant with the methods involved in such experimentation. I am strongly of opinion, however, that we must view

the subject of veterinary science as a whole and its various ramifications in particular, as part of general science, and that we must be guided largely in our work by those whose life has been spent in some of the more intricate aspects of science which mean so much in the planning of investigation and the interpretation of results. By all means let us train our own people but do let us be guided by others—in other words, let us collaborate, making use of all the available knowledge and assistance that can be obtained.

(3) Our system of education must be reviewed critically. There should be no excuse, in my view, for our lack of trained people who can form part of a team working on this important problem of animal husbandry. Further, by suitable training, every graduate from our Colleges should be in the position to appreciate and to apply the results of the investigations as they become known.

(4) There must be a revision of the methods of disseminating available knowledge. How do we receive information concerning new discoveries, new methods, etc.? The veterinary and the agricultural literature deals with the various subjects as they become known and scientific papers are read at various meetings. These methods are good so far as they go but I feel they do not meet the case entirely. Veterinary colleges, research institutes, etc., must cater for the needs of veterinary practitioners. Short "refresher courses" seem to me to be the most convenient way of imparting knowledge concerning recent developments.

What can the Practitioner do for the Livestock of the Country?

I have tried to show how veterinary science has progressed during the past years and how it has gradually come to be recognised as an integral part of agriculture throughout the country. Also, as time goes on, if we continue to progress, the profession will be expected more and more to interest itself in all the problems of livestock apart from the treatment of diseased or injured animals. (It must always be accepted that much of our work will lie in the treatment of such cases but the prevention of disease and the conservation of health are becoming all important.)

In my view, the profession must now, at this time, begin to play a much more important part in attending to the general needs of livestock throughout the country. It seems obvious that, in the present war, we may not be required to carry out such important duties in the field as obtained in 1914-18. We can, however, serve on the "home front" by taking up the problems of maintaining the health of our livestock. It may be that you feel we are even now as busily engaged as we can wish, but in my view there is much more to be done before we can claim to be doing all we can to keep the livestock in that state of health and freedom from disease consistent with a great country like ours.

Veterinary practitioners must (and I use the word purposely)

(*a*) control disease, treating the affected animals where necessary and advisable and preventing its spread to healthy stock;

(*b*) maintain, by giving the necessary advice, the health of the livestock throughout the country;

(*c*) advise the agricultural community concern- how best the livestock can be fed, housed, reared, etc., under existing circumstances, having regard to available supplies, conditions, etc.

In order that we may be in the best position to carry out such work, it seems to me that practitioners may have to alter the conception of their responsibilities.

Concerning the control of disease, practitioners are now in possession of much of the necessary knowledge. One realises very fully that in diseases such as mastitis, abortion, etc., it rests very largely with the owner of the particular herd as to whether any control measures can be put into operation. A veterinary practitioner cannot force his client to control non-scheduled diseases but, on the other hand, he can advise him of the chances of successful results following measures which can be introduced.

In many instances it is necessary to have a close liaison with an up-to-date laboratory where the various tests can be made and where further advice may be obtained, based on a knowledge of experimental results and from experience in the field. To my mind, there is not a sufficiently close relationship between the practitioner and the laboratory. We cannot do without the laboratory for, no matter how efficient we may have been in carrying out laboratory tests, etc., during our student and immediate post-graduate days, unless we are continually doing such work and can set aside adequate time for it, the results will, I fear, be irregular and not of the best. I foresee a much greater use being made all over the country of laboratories for service in the diagnosis and control of disease in farm stocks, entirely apart from research work.

Veterinary practitioners must also become acquainted with what is happening in the research institutions, colleges, etc., concerning investigation work generally. I have outlined how this can be done—a closer study of the veterinary and agricultural Press, the attendance of veterinary meetings and, where possible, the attendance at "refresher courses" where available.

It is my conviction that we must exert ourselves to a greater extent than we have done if we are to extend our usefulness to the farming community in maintaining the health and controlling the diseases of their livestock.

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Discussions

Scottish Metropolitan Veterinary Association*

Mr. W. W. Peggie, who opened the discussion jointly with Mr. Andrew Spreull, said: When I was asked if I would open the discussion on Professor Dalling's paper, I accepted the invitation solely on account of a feeling of responsibility to the Metropolitan Division, and certainly not from a knowledge that I could do justice to his most able and comprehensive paper.

To begin with, I would tender to Professor Dalling my heartiest congratulations and thanks for his interesting and stimulating address. The welfare of livestock of these islands is of momentous importance, and in these critical days may be vital to our life as a nation. To those of us who are practitioners, I say: Are we at present fully alive to our great task and responsibility and are we proving ourselves equal to it? And, as Professor Dalling wisely warns—we must not narrow our sphere of responsibility solely to "disease," but widen our outlook to embrace the general principles of the maintenance of health. Might I say I consider our task begins at the cradle or, in agricultural nomenclature,

*Meeting at the Royal (Dick) Veterinary College, Edinburgh, February 24th, 1940.

the breeding-pen, and should not end until the grave is cheated if that is possible. Before increase in our herds and flocks can proceed even normally, scientific knowledge and practical application of this knowledge by the veterinary practitioner is of the utmost importance. Without sound health stock decreases in numbers and increase becomes impossible. Without rational diet sound health is impossible. The practitioner must needs then get into double harness with the scientific worker and become acquainted with the secrets of the dietetician. Avitaminosis is claimed to-day to be very closely associated with a formidable army of diseased conditions: sterility, white scour in calves, skeletal diseases of the horse or osteo-arthritis, with the resultant nerve and bone diseases such as shivering, ringbone, sidebone and many other disabling conditions of equines. The agriculturist of to-day has a right to expect that the veterinary practitioner should be in possession of practical knowledge concerning the vitamin content of foods and so-called balanced rations and, what is even more important in these days of animal food shortage, substitution rations. More stock, more milk and more meat must be produced from the minimum of food with the minimum of waste. Many diseases can be prevented if our knowledge is based on reliable scientific findings, and if these findings are imparted in a practical and helpful manner. I entirely agree with Professor Dalling that hasty and unwarranted claims are made by the advocates of new and so-called more economical methods of animal feeding, and it is possible in the absence of practical professional checking of these results, that normal sound health in our herds could be jeopardised.

Reading through the whole of Professor Dalling's paper one can trace a golden thread of thought, namely, his ardent desire for the practitioner to co-operate with the laboratory worker. I can assure him that the full value of this co-operation is fully appreciated by the present-day country practitioner. The value of laboratory aid is pointedly exemplified when we are called upon to investigate and control diseases such as contagious abortion and mastitis in our dairy herds. Accurate laboratory diagnosis is essential if control is to be made possible. The ravages caused by these two conditions are enormous in many dairying districts. The profession will await with keen interest the production of an immunising agent for abortion in the form of attenuated live cultures. The use of virulent cultures cannot be the best method of dealing with this problem. Lack of proper isolation accommodation in the ordinary dairy farm constitutes a very serious drawback to control measures. The incidence of streptococcal mastitis does not appear to have decreased in keeping with the progress made in the sanitation of our modern dairy byres.

In our campaign we must now once again link up with the biochemist. Not the least important part played by the biochemist is that he has shown us just how very little we know. He can show a good record during the past few years—milk fever, lactation tetany, acetonaemia. He has shown us, also, the ravages of mineral deficiencies in all classes of stock. Thousands of pounds must have been saved to the stockholder and the reputation of the veterinary profession greatly enhanced.

Practitioners of to-day are indeed fortunate in their many aids to successful diagnosis and treatment. Radiology and radio-therapy within recent years have made most significant progress and in this College we are fortunate in having one who is a recognised specialist in veterinary X-ray work. I would strongly recommend all practitioners to see their mistakes in diagnosis shown on the screen.

If it be accepted that the prevention and eradication of disease in livestock is the veterinary profession's national duty, are we not fully justified in demanding that some measure of professional control should be granted to us over the wholesale and indiscriminate sales of many biological products? I venture to express the opinion that every veterinary practitioner in the country would gladly welcome the professional control of tuberculin. It is with a sense of humiliation that we daily watch the violating of the legitimate use of this diagnostic agent and the resultant damage that is being done to a truly great national tuberculosis eradication scheme. I wholeheartedly welcome the statement that tuberculin should be standardised. During the carrying out of herd testings recently undertaken by veterinary practitioners in connection with their duties with the Animal Health Division of the Ministry, many vexatious problems have presented themselves to practitioners. Tuberculin testing results have been very misleading and clients very difficult to convince.

Would it be too much to expect that the National Veterinary Medical Association ban the advertising in the official journal of the Association of all spurious and scientifically untested biological products? These advertisements, in my opinion, tend to lower our professional reputations in the eyes of the public.

Veterinary education so far as it affects the career of the veterinary practitioner must markedly influence his ability and future usefulness to the community. As one who had the honour of being for many years a Governor of this College, might I be permitted to say that I view with grave concern the increasing difficulty which present-day veterinary students find in obtaining adequate opportunities for seeing general country practice. This serious state of affairs must leave its mark unless some remedy is found. Our veterinary institutions, from their position in the centres of our cities, are greatly hampered in their work of imparting an essential and all-important side of a student's training. Our governing body insist that a veterinary student must furnish evidence of having seen veterinary practice in the country and his presence at obstetrical cases is essential, which proviso practically places the onus on certain willing country practitioners to become extramural teachers. The fact is, there are not enough of those willing practitioners to go round, and the students suffer accordingly. The need for a remedy is, I am glad to say, fully recognised in responsible quarters, but the lamentable lack of governmental financial support to our veterinary colleges constitutes in my opinion a grave error and may have serious repercussions on the future welfare of our herds and flocks.

Standing as I do this morning, in the presence of Professor Dalling, a veterinary pathologist of world-wide repute, one cannot help but feel that the welfare of livestock is very deeply rooted in his being. The list of his professional achievements, dating from the Great War until the present day, is most impressive, and the incalculable assistance he has given to the veterinary profession as the result of his untiring and reliable research work, we will never be able to repay. We are all delighted to know that his expert knowledge of poultry diseases is now to be placed at the disposal of the Ministry of Agriculture. Have we as practitioners yet fully realised that adaptability in our lives is absolutely essential if we are still to occupy our place in the community of useful peoples? We must have done with old methods and practices and bring in the new.

I would vouchsafe the opinion that in the years that lie immediately ahead of us our contribution to a great cause will be judged solely by what we prevented from happening and not by our vain attempts at remedying what has already happened.

Mr. A. Spreull: Last week your Secretary asked me to open this discussion and in a weak moment I accepted. On Wednesday of this week I received a copy of Professor Dalling's address. Wednesday and Thursday nights were spent on the road, and it was only last night that I had an hour or two to attempt to digest this excellent paper. However, as one of Professor Dalling's oldest practitioner friends, I felt that opening the discussion was the least I could do in recognition of our comradeship in various territorial camps and in return for his ever-ready help during the early days of immunisation against distemper.

Professor Dalling, with his usual efficiency, has made a comprehensive survey of the topic chosen. There is

little that I can find to criticise and like yourselves I must congratulate him on its excellence.

Professor Dalling says: "The veterinary practitioner as I know him to-day is a different person from what he was 25 years ago." Well, I have been in practice for at least 38 years and I am just the same "auld saxpence"; but I have certainly had to change my ways and amend my attitude towards most types of work in that time. The saddle horse and the open gig have gone: the pound of salts, fleams, draughts and firing iron have mostly gone; powders and balls are down to a minimum—and if a ball has to be given you have got to do it yourself instead of sending a young assistant with a gag or balling gun. He says further, "There is little doubt that veterinary surgeons to-day are practising their art of surgery or medicine as satisfactorily as ever they have done"—in surgery, to my mind, much more satisfactorily than ever before. We are aided by the advance in knowledge of both local and general anaesthetics, by suitable operating theatres, sterilising plant and a range of up-to-date instruments which were not invented 25 years ago or only available to the human surgeon. We have undoubtedly learned much from these last, but they themselves have had to come into our field to acquire by experimental surgery their technique and present abilities.

Medicinal treatment has also made great progress. The huge doses given by mouth are practically gone. Calcium gluconate in the treatment of milk fever has been a great improvement on udder inflation. The practitioner cannot now be blamed for causing mastitis, although an occasional abscess or an impervious jugular does occur in spite of sterilisation of needles, flasks, rubber tubing and solution. Magnesium sulphate intravenously acts as a charm in certain cases of lactation tetany. There are other advances in the control and prevention of disease—by anaesthetics, anthelmintics, sera and vaccines. I consider that the immunity against distemper conferred by the Wellcome vaccine-virus method is very satisfactory. We have also made great advances in dealing with leptospiral jaundice, lamb dysentery, black-quarter, swine erysipelas, swine fever, tetanus and probably other diseases of which I have no experience.

So far as contagious abortion is concerned, I have no faith in dead vaccines, or any of the medicated vaccines tried up to the present. Isolation, in the average Scottish farm in my district, has failed. Each farm in winter is fully stocked up. It requires additional building for isolation, which neither the tenant, the landlord nor Government will provide, and elaborate continued blood-testing of each animal, which few farmers can afford. I pin my faith to the Ministry's live vaccine, especially in heifers three months before service. If not perfect, this method gives, at least, a good percentage of live mature calves.

Contagious mastitis is the scourge of Scotland. So far I have had little or no success with vaccines or udder lavage. Isolation is the only hope. But where can you find sufficient housing for this under present conditions in Scotland with same milking machines or attendants who cannot be educated sufficiently? Many of our farmers are graduates of agricultural colleges. They are well-read, keen and anxious to try, but their enthusiasm wanes as their overdraft increases!

All practitioners are "health-minded," but the only opportunity a busy practitioner has to discuss these matters with his client is when stripped to the waist with the client holding the tail or rope. Nor has the practitioner the time to keep himself up to date in the various deficiencies, calories, vitamins and abstract theories many of which come to nothing. He is, however, always ready to test in practice any feasible suggestion put forward by his more fortunate or leisured associates, sometimes to his own detriment.

I agree that standardised tuberculin of a maximum potency is imperative if uniform results are to be expected by the Ministry.

I am all out for your team work and agree with you that Utopia will be wonderful when it comes.

Mr. H. W. Steele-Bodger (President, N.V.M.A.), in responding to a request of the Chairman that he should address the meeting, said that he was always glad of an excuse to return to Edinburgh and meet many old colleagues, but this time he had the added pleasure of listening to Professor Dalling's extremely interesting address. It had been extremely pleasant for him to sit and hear Professor Dalling so ably expounding views which he himself had held for long, but expressed only with diffidence. He agreed with practically everything that had been said about the future of preventive medicine, but he saw one snag—where was the practitioner to get his livelihood in practising preventive medicine? He agreed with Mr. Spreull that the use of draughts, etc., was diminishing, and rightly so, but with preventive medicine how could a practitioner charge adequate fees? The more progressive a practitioner became, the more limited his field for collecting fees, and to become completely "health-minded" would be to defeat his own existence. He had given much thought to this problem and the only solution he could see to the dilemma—and it was one to which he subscribed very unwillingly—lay in a largely extended State service.

He felt that the veterinary profession had "missed the boat" in the last 20 years—largely through lack of knowledge of animal husbandry: a subject of paramount importance to-day. The blame for this, he felt, should be shared by the Royal College of Veterinary Surgeons, the teachers and the Ministry of Agriculture.

What did the future hold for the general practitioner? He had hoped that that would be discussed at this year's Congress, which had now been abandoned.

He felt it was a pity that we had not in the past co-operated more with the National Farmers' Union. At last they had made contact, however, and he hoped that before his year of office as President was over, a joint committee of the N.V.M.A. and N.F.U. would have been established to discuss ways and means of acquainting the farming community with the veterinary profession's point of view, etc.

As regards collaboration with laboratories, he would say, in his capacity as President of the Society of General Practitioners, that, if and when they were assured of as much co-operation from research laboratories as was demanded from the practitioner, their co-operation would be forthcoming in full measure. He felt that any research recommendations affecting livestock, to be really successful, must come *via* the general practitioner to the stockowner.

With reference to Mr. Peggie's remarks on the difficulties involved in students seeing practice, he agreed that the problem was a serious one for all concerned. Teachers might occasionally legitimately complain that they taught advanced methods in clinical science and preventive medicine, and then when the students went to see practice they sometimes saw largely medicine vending; but that again was bound up with the problem of where the practitioner was to get his livelihood.

With regard to advertising in the *Veterinary Record*, he was in full agreement with Mr. Peggie. That subject was on the agenda of the next meeting of the Editorial Committee, but again it was a matter of £ s. d. Without all types of advertisements, however much they might dislike some of them, the *Record* would run at a loss, and necessitate raising members' subscriptions. If they were prepared to countenance that and to pass a resolution to that effect, the "National" would be glad to receive it.

Mr. J. W. McIntosh observed that he would like to associate himself with the previous speakers in congratulating his distinguished friend and colleague, Professor Dalling, on his very interesting contribution. He had not intended to take any part in this discussion, as he ceased practice some years ago, but as the Hon. Secretary had very kindly sent him a copy of Professor

Dalling's paper for perusal, he felt compelled to make a few observations.

The importance of the profession and its part in the welfare of livestock could not be over-emphasised at a time like this. It was a sad reflection on our country that it required a war to bring home to its people and its Government the vital necessity of stimulating and encouraging in all directions its oldest and basic industry—agriculture. Its importance in the economic life of our country was self-evident. Our livestock were the finest in the world, highly appraised in commercial life, and looked to by all other countries for purity of blood, stamina, etc. It did seem remarkable, therefore, that hitherto the value of our profession in safeguarding the interests and welfare of livestock had never been fully recognised or appreciated.

Our value to the country was readily recognised when the interests of the nation was being threatened by animal diseases, but whatever favourable impression we created during that period very often evaporated when the circumstances responsible for its creation disappeared. It was only within recent years that the importance of veterinary services in the economic life of our country had been seriously recognised, but even now we were not given our proper place in the councils of the nation when matters affecting animal health and animal wealth were being considered. They had only to look back a few years and note the constitution of various Government committees which had been set up to enquire into matters of this kind. There were, however, indications that "the sun was rising on a darkened world," when we could hope to find, in the words of Kipling:—

"Each in his place by Right not Grace
To rule his heritage."

Professor Dalling had stated in his opening remarks that the veterinary surgeon of to-day was a different person from what he was 25 years ago. Perhaps he (Mr. McIntosh) was sentimental, but he would like to pay a tribute of profound admiration to many of those great men who preceded us. He did not think he was exaggerating when he said that it was to those great pioneers who showed wonderful foresight and determination in the face of discouragement and even financial loss, we owed many of those privileges which we enjoyed to-day. These names must be recorded in the history of veterinary education and science for all time.

It was, of course, true, as Professor Dalling had said, that changes, and great changes, had taken place during the past quarter of a century; scientific progress had been very great and rapid. Public opinion had changed, and with this the activities of the profession had expanded in many directions and must still expand. One of the most promising channels was the field of research, which was claiming some of our best and most ambitious workers. As much of this work depended upon accurate observations and practice carried out in the field, it was here that the fullest co-operation and collaboration between the practitioner and research worker was called for, if the best results were to be obtained. There had been, he was afraid, in the past, a tendency in some instances to push the practitioner aside, when making investigations of a special character. This was wrong and was calculated to provoke discord and even opposition. It had been said that many practitioners were incompetent, but some incompetence was present in every field of endeavour. It was to the practitioner that the stock-owner must look primarily for that measure of protection and advice which always had been, and must always remain, his first line of defence. No specialist, or group of specialists, could adequately take the place of the able practitioner.

He felt sure that whatever changes might ensue, the members of the profession would be prepared to meet them and adapt themselves with loyalty and efficiency. He felt a little concerned, however, as to the future of general practice, particularly country practice, in the face of recent developments. It must be obvious to everyone that as new salaried services were being set up, the position and status of the country practitioner was not likely to improve unless he were given an integral part in all schemes which were evolved for the promotion of animal health and animal wealth.

Mr. W. Nairn said he felt he ought to try and dispel the increasing gloom which seemed to be gathering round the discussion. To Mr. Steele-Bodger's worries with regard to £ s. d. he would reply that all stupid farmers were not passing away just yet.

Professor Dalling had commented on the intrusion of other professions into veterinary research, but that was the result of the long neglect from which our profession suffered and which affected research more seriously than any other section of our work.

In the early days our progress in laboratory enquiry depended largely on the enthusiasm of a few notable individuals, whereas to-day we had several teams active on questions of great professional importance. The Agricultural Research Council, in spite of much criticism, was doing good work in co-ordinating the various efforts in the domain of research and he personally did not fear any intrusion by any other profession acting under the control of this important group of scientists.

With regard to preventive medicine, great strides had been made, and to-day the majority of practitioners found themselves utilising that knowledge and practising preventive medicine; he would, however, add that the results of researches were sometimes disappointing in practice—often, he felt, the result of hurried publication without adequate testing and retesting. The modern application of knowledge was sometimes limited by the expense and trouble involved, and he agreed with Mr. Spreull that these difficulties tended to render some farmers apathetic. Even the eradication of tuberculosis from a herd—which was, of course, quite feasible—often proved difficult in practice for a variety of reasons, such as the extra expense and the restrictions on the movements of stock.

As regards difficulties in the training of students, blame had been laid on the R.C.V.S., the teachers and on the Ministry of Agriculture. He felt, however, that they should not be too hard on the teachers. It had been suggested that they might do more in sending out graduates adequately instructed in modern clinical methods, but he would remind them that the required improvement in clinical instruction could not be brought about without money.

To the young men there he would say that in spite of all they had heard that afternoon, they need not be too despondent. There would be plenty for them to do and plenty of problems to solve when they qualified.

The Chairman (Dr. J. Russell Greig) observed that, at this stage, he would like to refer to one point. It had been suggested that some research institutes were not co-operating fully with practitioners. He wished to emphasise that so far as the Animal Diseases Research Association was concerned they worked in the closest collaboration with members of the profession in Scotland. They received a lot of help from practitioners and were thankful for it; and he knew that every member of his staff would go far out of his way to help a practitioner in any way he could.

Sir Arthur Olver (Principal of the Royal "Dick" Veterinary College) congratulated Professor Dalling on having dealt with the broader aspects of the future of the veterinary profession and its relationship to the Government of the country. He himself had felt for many years now that the profession must take a much wider view of its responsibilities in helping livestock owners than it had done in the past. In spite of an active N.V.M.A. which was doing its best to rectify the position, we were still a long way behind other countries in that field. We had never had a veterinary organisation dealing with all aspects of livestock, whose directorate had adequate recognition and powers, as was the case in countries like South Africa and the U.S.A. In this country, veterinary surgeons had usually held entirely subordinate positions.

We required broader education, especially in animal husbandry. The field of training in the past had been too narrow—it must be greatly widened so that our graduates could meet members of other professions on their own ground and discuss their problems with them. In the past also there had been insufficient encouragement for research. The Agricultural Research Council had done a great deal to help them in that respect. The R.C.V.S. was in sympathy with that attitude and encouraged research as much as possible.

In the past, the schools had been handicapped not only by having too narrow an outlook on the proper scope of the profession, but also by lack of money and proper facilities. The latter was still a serious problem. Practical instruction was admittedly too limited, but the main difficulty was funds. They must have field stations with facilities for enabling students to get more clinical instruction at the colleges and where students could see experiments in progress and so become acquainted with the methods of research and scientifically controlled investigation.

Professor W. A. Mitchell said that Professor Dalling's paper was one of the best he had ever heard in the College. There were many aspects of this wide subject one might tackle. He thought, for example, that Professor Dalling had been just a little hard on the practitioners of the past, and he was glad Mr. McIntosh had taken up the cudgels on their behalf.

Some 30 years ago, general practice was the be-all and end-all of the profession, other openings being few and far between. In those days they aimed at being clinicians first and tried to take a comprehensive view of things. He felt that students, whatever their ultimate aim, would do well to concentrate on that method and become practitioners first of all, for practitioners were still the mainstay of the profession. In the team work Professor Dalling had suggested he would like to see the practitioner taking his rightful place as captain of the team, and not handing over everything to the research worker and then taking little or no interest in the problem under consideration. He must be the co-ordinating link between the animal owner and the specialist. He should be best able to give advice to the farmer where to seek further help and when reports were received from the laboratory or other specialist, he should interpret them to the owner.

The tendency for the owner of animals to short-circuit the general practitioner and fix upon a specialist himself was good neither for the public, the specialist, nor the general practitioner. Practitioners had often themselves to blame for this state of affairs as they told clients to consult laboratories or specialists direct instead of taking the trouble to go with their clients to meet the specialist or, when this was not possible, communicating by letter or telephone the clinical features of the problem as they themselves had observed it.

He would like to see practitioners taking greater interest in keeping up their education. Successful courses had been run in the College in the past, but they had been gradually dropped for lack of support. He realised the difficulty of getting away in a one-man practice, and he felt that it would be a good idea if some financial assistance could be given to practitioners to enable them to attend study courses.

He hoped that after the war, if the Government implemented its promises to the agricultural industry, there would be an increase in the importance of the practitioner.

He thought that the growth of a few large practices at the expense of others had not been altogether for the good of the profession or the community. If agriculture were to prosper, as we hoped it would, there should be much more demand for practitioners, and he believed we would see a return to more and smaller practices.

Mr. J. N. Ritchie stated that he had listened to one of the most inspiring addresses he had heard for many years, but felt that a great deal of the discusion had not shown a very hopeful note. Professor Dalling had mentioned several pieces of painstaking and brilliant research which the profession had to its credit and he felt that, having thus shown our capabilities, we were now in a much better position to work in conjunction with other sciences than ever we were before. He referred to tuberculosis in cattle which until a few years ago was being dealt with solely by slaughtering, as a public health measure, animals which had probably already passed on infection. We had now, however, started to eradicate this disease and he felt that in making that start we had broken the ice and had taken the most difficult step.

He referred to what Mr. Steele-Bodger had said about the difficulties in the way of eradicating other diseases from a tubercle-free herd. It was, surely, fundamental that we must rid a herd completely of one disease before attempting to eradicate others.

Dr. J. Stewart commented that although he was not a member of the veterinary profession, he had been closely associated with it for many years and it had always appeared to him that veterinary colleges were not paying nearly enough attention to animal husbandry in the widest sense of the term, which meant the maintenance of animal health.

Complaints had been made about research institutes not co-operating fully with general practitioners, but from contacts made during field experiments on diet deficiencies and their effects on animal diseases, his experience had been that the fault lay usually with the practitioner who often appeared to have little interest in the prevention of disease by proper attention to diet, etc. His contact with the profession, however, had led him to realise the truth of Professor Dalling's words, that a large amount of excellent work had already been done.

Dr. J. Russell Greig, in winding up the discussion, said that there was a tendency to overlook the extreme rapidity with which veterinary science had been progressing during the last 25 years. As Professor Mitchell had remarked, it was not so long ago that clinical practice was the only sphere of activity open to the veterinarian. Then came specialisation—State medicine, public health, teaching, and in more recent years research institutes came into being. This extensive and rapid specialisation had split asunder professional interests which once were so uniform. We were now beginning to realise again that we were all members of one science, and that the basis of that science was clinical practice. The watchword must, therefore, be collaboration between each branch of the profession.

Not many years ago the veterinarian was looked on somewhat askance by other scientific workers. Now that state of affairs had undergone a relatively rapid and very marked change and to-day the veterinarian, with good reason, could meet on grounds of complete equality the representatives of the other biological sciences; while the value to the State of the services of the veterinary profession as a whole was now clearly appreciated. This might, he believed, be regarded as an earnest of an even greater extension of the activities of the profession in the future.

Professor Dalling, replying to the discussion, said he was more than grateful to the various members who had contributed to the discussion and was particularly gratified that his efforts had given rise to such valuable contributions. He wanted, at once, to clear up a point to which both Mr. McIntosh and Professor Mitchell had referred. It was concerning the general practitioner. It was evident (said Professor Dalling) that in his talk he had created an entirely wrong impression concerning his regard for the practitioner. He then read from his written paper and added that he hoped it would be evident that he held the practitioners as a body in high esteem as men who had changed their methods and outlook as time had passed. He agreed entirely that the practitioner was the mainstay of the profession and that no matter how much good research work was done by members of the profession, no matter what organisations were set up to control health and disease in animals, the profession would be judged by the work carried out by the practitioner.

He agreed with the view that the profession had been handicapped in the past by a scarcity of men trained in the various branches of science which were fundamentally important in the study of disease and health problems, but he felt that the gap was gradually being filled. The position of veterinary science was very different to-day from what it was a few years ago: we were now well represented on the various official organisations and our assistance was being sought in connection with matters of national importance. But, he continued, we must not stop because we had made some progress. It was only a beginning and the results up to date were only a sample of what could be done. We must devise ways and means whereby we could pursue the study of the problems concerning the welfare of our domestic animals and we must collaborate to the greatest possible degree with workers in the various branches of science in order that we might better understand, and sooner, the problems we had to tackle.

He was well aware that one of the limiting factors concerning veterinary work generally, and especially work of an advisory rather than a "treatment" nature, was finance. Lack of funds had been largely responsible for much of our present lack of knowledge, but each year saw more money being allotted for the study of health and disease problems. He earnestly hoped that financial support would continue to be given. He realised that the type of work he envisaged for the practitioner of the future in the control of disease and the maintenance of health, especially in the larger animals, meant a somewhat new outlook and here again finance was an important consideration. At the present time many veterinary practitioners reported that they either could not or did not get fees for advising farmers on problems of maintenance of health as opposed to the treatment of disease. Undoubtedly the veterinary practitioner of the future would always be required to treat disease and injuries in animals, but he must prepare himself to deal with animal life from a health preservation point of view. Naturally, the question of payment for services must arise and must be dealt with in any such scheme. It might be that subsidies would have to be considered—that, however, was a subject for the future. Mr. Spreull had said "Utopia will be wonderful when it comes." We would probably never reach that state but we must progress and though we might fall far short and only accomplish a small part of our schemes we should have done something worth while if we kept the goal in front of us all the time.

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Society of Veterinary Practitioners*

Birmingham Meeting

The discussion was opened by Mr. H. W. Dawes in the following terms:—

I am quite in agreement with the points of view put forward by Professor Dalling in that they represent a policy, but the execution of that policy in the terms of modern conditions is somewhat difficult. The points are so closely bound up with the economic problem that I feel that a policy based on what Professor Dalling has said may be one of a Utopian character. A farmer on the outskirts of Birmingham was talking to me in similar vein and put his finger on the most important fact when he said, "You know, Mr. Dawes, you veterinary surgeons in practice could be of the greatest value to us engaged in agriculture if we could avail ourselves of the information that the veterinary surgeon has." I replied, "I think that is true," and added, "I think the veterinary profession could make better use of some of the information which you possess." "That is so," was the rejoinder, "I think much could be learnt on both sides."

That conversation is one of the answers to some of the questions raised by Professor Dalling, *viz.*, who is going to pay for it? The farmer said, "If we could have in this country an arrangement similar to the medical panel practice we should be in a position to avail ourselves of your services much more freely than at present." That is perhaps an economic aspect which Professor Dalling has not stressed, but listening to the excellent proposals put forward, I cannot but feel that if we are ever going to move in the sense of collaboration between agriculture and the veterinary profession some adaptation of the panel system is absolutely necessary. A point which should never be forgotten in these days is that we are quite willing to do more for agriculture if agriculture is prepared to do a little more for us. Reverting to the panel system, I cannot help thinking that at a time like this, when it is essential that the animal life of the country should be preserved, improved and carried on at the highest point of efficiency, now is the time when something in the nature of a panel system might be introduced. There are men up and down the country to-day engaged in the practice of veterinary medicine who find it difficult to make both ends meet. I am perfectly certain that the position of the veterinary practitioner to-day is very much worse than it was in the months prior to the outbreak of war—not only that of men like myself who practise in purely densely populated districts, but of practitioners in agricultural districts—the latter, too, are feeling the economic position severely.

I am at one with Professor Dalling when he says that now is the time to act and that men should be turned out of our colleges capable of taking their places in the research team, but what is going to happen in the meantime? It is all very well to talk about preventive medicine, but when one is on a farm doing a job of work and in the course of conversation suggests to the farmer or client something on the lines which Professor Dalling has put forward—which the farmer applies in his turn with success to himself and the saving of money to his pocket—are we going to receive a fee for that? The answer is, and is likely to continue to be, in the negative. Our late President, Mr. Steele-Bodger, is a great supporter of the theory of preventive medicine; I am one of its bitterest opponents, not because I do not believe in it but because, in these times and under the economic conditions of the war, we shall have to alter things so much before we can say to the graduate, "You can make your living from preventive medicine." I have reached the middle-third of my professional career and at the risk of being called a pessimist and in spite of the vista which Professor Dalling has shown us this afternoon, I am very glad I am not at its commencement. If we are going to accept Professor Dalling's tenets the State must contribute to the support of the veterinary surgeon—I do not care by what means—panel or otherwise—but the veterinary surgeon must be protected. We shall never get collaboration between the veterinary profession and agriculture unless we have some form of financial stability.

Turning now to the horse, I claim that it is a very fortunate animal as, very largely, it has been spared the attention of some of the "outside" progress. No one in the room can deny that the present though limited good state of health enjoyed not only by the commercial horse, but by horses up and down the country, has been largely due to veterinary work in the past. In my view the horse may be congratulated on having escaped the attention of the research worker—perhaps not the veterinary research worker, but others.

The question of housing of pigs has been engaging the attention of research workers and other interested bodies for a long time, but most of those present know that the result has done nothing to reduce the incidence of disease; in fact it has produced new problems. There is an example, as Professor Dalling has pointed out, of the fact that progress in one direction may produce problems of its own in another. The production of the 2,000-gallon cow is another example. There is a set of workers who have gone along the lines of super-milk production and while they have produced the milk they have not improved the constitution of the producer.

*Annual General Meeting, April 5th, 1940.

I would say, in conclusion, that while I am quite a believer in the graduate being turned out as full of knowledge as possible, I still think that very often he is turned out without the rudimentary essentials which are so important and which, if he possesses those other attributes, follow in the course of experience. I have seldom, if ever, listened to a paper which has given all of its hearers, whatever their sphere of veterinary work may be, so much to think about.

Mr. F. Chambers said it was true that things were not so good at present, but that was due more or less to abnormal conditions. There was a large number of veterinary surgeons unemployed to-day, a condition which had not happened for the last twenty years. There were veterinary surgeons offering to take positions at salaries even less than those offered when he graduated.

Apparently the veterinary profession had taken a retrograde step. While one could not but agree with much that Professor Dalling had said, if it was going to be put into practice it had to be paid for by somebody. Members of the veterinary profession could not afford to work for nothing; they had expensive families, the cost of living was high, and if they were going to do 50 per cent. of their work for nothing, they were going back where they were in 1890. The only solution to the problem, as he saw it, was that veterinary surgeons, in regard to their work with larger animals, would have to be as they were in South Africa, members of a purely State veterinary service. If they were going to make preventive medicine a success it had to be a State business from the beginning. They could not expect the veterinary practitioner to do it, because he could not do so as things were to-day. People would not pay them for advice, so payment must be by the State for the State.

Colonel R. J. Stordy thanked the members for the kind way in which they had welcomed him. He had listened with great interest to Professor Dalling's paper, particularly in connection with their position with agriculturists, and, in this connection, mentioned that he had spent a considerable time in the Colonies. He had gone out to East Africa in 1898, when he was appointed veterinary officer, and turned his attention not only to veterinary work, but to an attempt to do something to create a better state of affairs in the livestock industry. He received permission from the Government to start an experimental farm, and they made a very good show. A Director of Agriculture was then appointed who had never seen the country: he told the Colonial Office that they had been pleased to put him under a Director of Agriculture and they might as well have appointed a medical officer to be a surveyor of forests. Preventive medicine formed a big part of their work. After the war he got permission to go to Peru and had full facilities from the Government to carry out what he always felt was the veterinary surgeon's job, to establish healthy conditions among the livestock of the country. He had 30,000 sheep and carried out one of the biggest sheep experiments in any country. Only a few weeks ago a wool merchant told him they could buy good wool from those high altitudes.

We must think out this agricultural side of our profession so that we could advise the agriculturist and speak to him in his own terms, said Colonel Stordy. The other day he had the pleasure of giving a chat on animal welfare to students at the Royal Veterinary College in London, and was afterwards taken round the wonderful building. All he would say was, how many of students could tell when an animal is well? Some of their colleges were well situated, but it was difficult for students in London to see animal industry as it is carried on in modern times. In Nigeria and Kenya the chief veterinary officer took his place at the table of the Chief Legislative Council of the country.

Mr. C. Weighton remarked that Professor Dalling had to some extent stressed the necessity for co-operation between practitioners and officials or research workers. It seemed to him that it would be a very great advantage if they had large district laboratories in which they could get immediate attention to material required for examination. In the case of swine fever they sent to the Ministry's laboratories and were told it was either swine fever or not swine fever and that was as much as they could learn. By the time they had sent material to colleges, by the time they had got someone else to examine it, the opportunity had probably gone. He had had some experience as a veterinary officer in what was then the seamy side of veterinary service. There he was afraid the veterinary officer was a buffer between the agriculturist and the State and he got a good deal of knocking about. Looking at the economic aspect, it would be best for a practitioner to receive part of his remuneration from the State and part from the agriculturist, the dog owner or the cattle owner as the case may be. If we had a State veterinary service the practitioner would be entirely at the mercy of the farmer. There was no limit to the service required when they were State veterinary surgeons.

Mr. K. D. Downham said practitioners and the whole profession owed a tremendous debt of gratitude to Professor Dalling for all he was doing and had done in the way of bringing them help to get the profession into some of the positions which they ought to hold and had held years ago. He had been for many years at an agricultural college and knew that a great deal of work they could do was being done or being attempted by other people. Frequently he almost despaired when he found committees appointed to study particular problems, such as pig diseases, contained only one veterinary surgeon. There were problems of great importance to be tackled and the veterinary profession, which could give advice, was often ignored. He had been running an experimental farm which he had found of the greatest value to him in his investigation work. He thought there was a bridge to be crossed between the veterinary surgeon and the agriculturist and that task had not been made easier by the part taken in the animal industry by those who were purely agriculturists. They as a profession must make themselves very much more *au fait* with animal husbandry methods. They must try to get the confidence of agriculturists in greater measure. He thought they should not always hang out for the fee; he was sure it would come afterwards.

Mr. A. Forsyth felt he was rather between two schools of thought on the matter. As an ordinary country practitioner one had had to do much in the past for nothing concerning the giving of advice. It was a thing which one had not grudged very much because as a rule it had been like a boomerang, it had come back later. If they had gained the confidence of farmers they had done quite a lot towards the betterment of the profession. There was no doubt that the young graduate did not know the simple physiological facts concerning the large animal. It was absolutely essential that there should be some central organisation of some description, on which as veterinary practitioners they could rely to give them a report and not to steal their thunder altogether, sending it to them and not direct to the farmer. They would have to do the non-essential as well as the essential in panel practice on farms. It was such an enormously wide subject that they had to take it home to consider it before they could formulate any definite method.

Mr. H. W. Steele-Bodger added his tribute to Professor Dalling for his kindness and the material he had placed at their disposal. He was in full accord with all he had said. Perhaps it was not all to the good to be the son or the grandson of a veterinary surgeon and there was perhaps inborn in one a tendency to carry on a practice on the same lines on which it was carried on ten, twenty, thirty, forty or fifty years ago; but he felt a challenge had been given not only to Professor Dalling but also partly to himself for he was a propagandist of preventive medicine. He admitted that under present conditions it was absolutely impossible for a general practitioner to earn a livelihood with preventive medicine, and he reluctantly agreed that the solution was an extension of the State service. He thought the panel system

of the medical profession had been the financial salvation of that profession, but his association with many general medical practitioners had forced him to the conclusion that it had almost sounded the death knell of that profession scientifically and represented the most retrograde step that it had taken. If they had State service they had to have something better than that. Frankly, he could not see any alternative solution of that problem than the Ministry of Agriculture taking over preventive medicine, *i.e.*, extending their present activities to embrace many of those diseases mentioned by Professor Dalling that afternoon. One of the most paramount was the scourge of mastitis, which in his experience had increased of recent years to an immeasurably greater extent than any other disease. The reasons must be clear to many of them, *viz.*, shortage of labour, intensive milk production, and last but not least the more general introduction of that necessary evil, the milking machine. He thought those problems were not insoluble; they had to be tackled forthwith and he was rather aghast to hear Professor Dalling say he wondered if they were not too late. He hoped and believed that that was not the case. He thought it was up to them and through the Society up to the "National" to see if they could not tackle these questions on the broad scale of a long-term policy. They had to have more collaboration with the Ministry of Agriculture and the National Farmers' Union. If they could get together with the N.F.U.—get round a table and discuss their problems—he thought much good would result. The N.F.U. had direct access to-day to the Minister of Agriculture, with whom they held weekly meetings, and he believed that was very good means of access for them; if they could get them to help and go with them to the Ministry of Agriculture and put those problems before them, they would win through. He suggested they should send a resolution from the Society to the "National" urging the National Veterinary Medical Association to set up a committee to investigate the possibilities of closer relationship between the veterinary profession and the National Farmers' Union in their common interest.

Replying to the discussion, Professor Dalling took as his motto "Save agriculture from itself." He felt that one thing they had learned that day was that the veterinary profession had the knowledge, that they were very willing to help agriculture in the various problems it had to face, that by helping agriculture they would be doing an immense national duty and that it only required the "ways and means" to enable that duty to be discussed and put into operation—as to the measures by which agriculture could be helped from the position into which it was falling at the present moment. Mr. Dawes spoke about finance and many matters. Of course none of them could exist without money: the ideal state might arrive one day when they did not need money, but that would not be in their day nor for many centuries to come. Therefore, they must find a way of rewarding the veterinary practitioner for any services which he may render for the benefit of the agriculturist. At the present moment he was rewarded by the agriculturist because he was asked to do specific bits of work for him. If the practitioner in attending that specific case gave other advice which he was not called upon to give, evidently there was no recompense for that. He looked forward to the time when there would be reward—recompense for that type of work.

Two different ways had been suggested whereby more preventive methods for controlling disease and maintaining the health of animals could be carried out. They all agreed it was very necessary that they should take a share in the control of the health of animals in this country. One way suggested was the panel system and the other was the extension of the Animal Health Division of the Ministry. He would not like to voice opinions on them without very serious consideration and without talking to a lot of people who might have had experience of the various methods of controlling disease. They had heard from Colonel Stordy and Mr. Chambers of what happened abroad if veterinary people were brought into schemes and got their say concerning the way schemes could benefit agriculturists as far as normal health was concerned. But if veterinary people were in subordinate positions and if the head of the organisation was not inclined to support the veterinary people and their ideas, then the health of the animals naturally suffered. He did not visualise a panel system such as the medical panel system. The latter dealt with sick persons. That was not what he visualised for animals. He visualised the health of the animal being maintained and preventive measures being carried out. There was no doubt whatever that they had a tremendous duty to perform and although it might take a very long time for them to work out in practice what they would like to see, he thought each one of them must continue to press forward some policy which they hoped one day would materialise. The resolution which Mr. Steele-Bodger had drafted seemed to him to be the beginning of a concerted effort, but he thought they might put something into ship-shape order if the meeting would approve of what they did in the matter. That had to be thrashed out round a table. A plan had to be devised and once that plan had been established the various authorities had to be interviewed and to be taken with them in their considered schemes. Mr. Steele-Bodger mentioned the National Farmers' Union. On behalf of Colonel Stordy he had had a lot to do with that body in connection with National A.R.P. for Animals' work. He had found the Union in his district a most reasonable body who were out to work with the veterinary profession as much as they could. He felt if one got them on our side concerning the prevention of diseases of animals and maintaining their health in connection with veterinary services, and they would press the case in the proper quarters, it would be of considerable help. Nothing was nearer to his heart than district laboratories. He thought the day must come when veterinary practitioners, be they in panel or subsidised by the Ministry, must have access to a laboratory in close proximity to them and they must be staffed, not with men who were working on essentially academic subjects but men who have practical knowledge of veterinary work in the field as well as in the laboratory. As a veterinary profession they were gradually getting more and more fitted to carry out preventive treatment and the maintenance of health in animals. They must become more and more familiar with all that goes on in the country itself and with the agriculturists in particular. They must be willing to work in those spheres, but they did not see how they were going to do it. It was up to a body like the N.V.M.A., stimulated by that Society, to consider ways and means whereby the shortest route would be found to get some scheme considered and in the future put into operation.

It was left to Professor Dalling and Mr. Steele-Bodger to draft a suitable resolution.

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Chester Meeting*†

The discussion was opened by Emeritus Professor Share Jones as follows: I wish to congratulate Professor Dalling on his selection of a subject. It is unusual for a pathologist to advocate the wider interpretation of veterinary science. I am convinced that the practice of the veterinary surgeon has suffered through veterinary science having been for too long interpreted as being synonymous with veterinary pathology and by some even further restricted as being concerned simply with the schedule of diseases.

Furthermore, our science has been greatly handicapped by the common misinterpretation of the term "agriculture."

* Held on May 24th, 1940.

† Professor Dalling has prepared a joint reply to the discussion at this meeting and to those at the meetings at York and Glasgow (at which he was unable to be present), this reply being given at the termination of this series of reports.

As long ago as 1914 I advocated that what was wrongly termed agriculture should be split into three divisions :—

Horticulture and Forestry (plant and vegetable life).

Veterinary Science with Animal Husbandry (animal life)

Agronomy (the soil and its other products)

and that each division be accorded a Faculty in the University of Wales.*

Through the misuse of the term, whenever the word agriculture is used in this country the mind seems to have turned inevitably to the last-mentioned division so that a professor is given charge of the whole range whether the subject be a cow or the study of the soil and manures.

Consequently Professor Dalling has, in my view, been rather too timid in approaching the subject and seems to be somewhat nervous when dealing with what is mis-termed the Agricultural Scientist.

In my view—and I hold it very strongly—the veterinary practitioner should occupy precisely the same relationship to the domestic animals as the medical man holds to the human being. Whatever other person may become involved—as, say, an engineer or inspector of some kind—the ultimate authority on the breeding, rearing, feeding, housing, care and management in health and disease of a human being is the medical man. This is never challenged or even questioned. The training and attestation of the veterinary man is strictly parallel and designed for exactly the same purposes in relation to the lower animals.

I have been urging this for years ; in fact, in my definition of animal husbandry I go farther and apply the science to the use of the animal, its products and by-products during life and after death. But we don't make known to the public the nature of our training. The basic subjects of veterinary anatomy, of veterinary physiology, are even now in danger of being usurped. Surely anatomy—the structure of the machines with which we deal—is the foundation of our case. It is the dividing line between us and those who would absorb our field.

I cannot understand the mentality of those who even in our own profession would advocate a restricted knowledge of the machine. What is required is a complete knowledge of the subject and furthermore as intensive an application of it to the living animal as it is possible to secure. That would be the attitude of a modern engineer. Yet there is an amazing proposal before us that would put the anatomy of animals in a position subordinate to that of the human subject. The acceptance of this would be suicidal to our little profession. I am speaking with inside knowledge and on inside experience that is unique in this country, and unless we wake up and take our stand the " pass " will have been sold.

We have already committed suicide in the field of public health by allowing the miserable little Agricultural Bill to slip through. We have not been able to discover whether any amendment was ever put to the accredited Ministry with the object of protecting the then existing rights of veterinary surgeons. I feel that such an amendment would have been accepted, for I have found the Minister sympathetic in other matters—I mean the Minister at that time, not the Ministry. But our rights are not protected and many of our men who were in positions that they had every reason to regard as secure found themselves actually having to apply for a job. Clerks of little parish councils have been treated more generously. This act should either be repealed or drastically amended as soon as possible.

The position which has been secured, after much endeavour, for our science in its applications to the distribution of essential food in relation to public health has been surrendered to those concerned with the human side of the science and it would be interesting to know the responsible party. The scientist who is professing to deal with what is so erroneously termed agriculture, but which (as has been pointed out) is more correctly agronomy, is evidently prepared to absorb the rest—the production of such food—and I fear there are some in our profession who would knowingly or unwittingly contribute to this by placing our existence through the treatment of our basic subject entirely at the mercy of a government department. Money secured at this price is too dearly bought.

As to the future, I feel that we should devote our energies to the promotion of a comprehensive Insurance Bill. I have advocated this for many years in this country and others, notably at the University of Ghent. Time will not permit me to deal at length with it—I have already done so on many occasions. The development of public opinion and the preparation of such a measure would take a tremendous amount of time and effort, as was the case with the National Health Insurance Bill which now stands as the soundest of our great national schemes, but it would be well worth while, for if achieved it would remove the risk from the individual, it would eliminate those who were trespassing on the field and would bring the animal population within the scope of the science designed and intended to deal with it. All these would be in the interest of the animal industry and above all in the public interest.

Mr. T. Wilson congratulated Professor Dalling on one of the most interesting papers for practitioners that he had ever listened to ; there was such a tremendous lot in it that he hardly knew where to begin to discuss it. With regard to contagious abortion we were still " up against it " as there were conflicting opinions on the use of live vaccine. He failed to see what harm the use of living vaccine would do to maiden heifers and something should be done to allow its use in this type of animal.

He referred to the impossibility of isolation in the Cheshire area and thought that if the live vaccine were used it would check wide-spread infection in his area. He had been using it on one farm with most satisfactory results. Again with mastitis, another bugbear, in Cheshire they had to consider the economic point of view. He thought a man should receive compensation if he got his herd free of contagious abortion. An owner was compensated in some small way in mastitis in that he obtained a better price for his milk. The only satisfactory way he had found with mastitis was to advise the owner to milk the cows in the order of their ages and all affected cows last.

There was a great deal of controversy about pigs and he thought that if paratyphoid was scheduled as a contagious disease it would be a big help.

Mr. Wilson then referred to the chief subject of the paper, *viz.*, animal husbandry. This was amongst the basic subjects taught at college and though we might have a good grounding in them, unless we were able to continue with it and make use of it after we had qualified, he did not see that we were going to become expert at it. There are certain things we must do in conjunction with agricultural colleges, otherwise they would encroach on us and we on them.

A Member expressed the view that *Trichomonas* abortion and sterility had been badly overlooked and that before long this disease, which could spread very rapidly and which we could not do much about at the moment, would receive more attention. It needed a great deal of research and if possible should be made a scheduled disease.

Both Professor Dalling and Professor Share Jones had remarked that the profession was not recognised as it should be and he thought that we did not push ourselves sufficiently. There were great names in the medical profession which were household words and the ordinary medical practitioner had a great deal of reflected glory from them. There were few big names in the veterinary profession and the only time we ever really got into the daily papers was when there was an outbreak of foot-and-mouth disease or when two veterinary surgeons had a dispute about some particular case and then it was an item of news ; our profession was very much neglected in the daily press and people did not get to know what it was doing.

Mr. Llewellyn Jones said that after hearing previous

* Share Jones, Higher Agriculture Education in Wales, Cardiff, 1914.

speakers he thought that most of our friends had not quite tealised the point which Professor Dalling had been trying ro drive home. The paper included the Professor's views on various diseases, but to him the main point was that Professor Dalling, in addition to being an eminent pathologist, had proved himself to be an eminent "veterinary evangelist." He had given a sermon that day which should penetrate into the heart and conscience of every individual member present—it certainly was a sermon for the *individual* and not for the collective congregation. We squealed that the veterinary profession did not get its proper place and recognition, but the truth of the matter was that the fault lay to a great extent with each individual member who went to make up the profession as a whole. We could not expect a few of the leading men at the head of our profession to fight our battles when we ourselves did very little to prepare and arm ourselves for battle. When a battle was won for us were we *individually* in a fit state and prepared to accept the responsibility so imposed on us? He was sorry to say there were members of the profession who appeared to be lackadaisical and showed little interest in the profession as a whole. We must be up to date and we must create an impression upon our clients that we are masters of the situation and are capable of rendering the best service and giving the best advice at all times and on any disease, especially with regard to prevention and eradication.

"Haphazard and empirical methods must be abandoned, otherwise we shall be no further forward than we were 40 years ago," said the speaker, in conclusion. "Each *individual* has to put his 'best foot forward' and prove to the public that he is a man capable of doing all that can be done. When we are in a position to do that then our leaders can and will fight for us and their task will be very much easier than it has been in the past. We must take Professor Dalling's sermon to heart and take it seriously, and not think so much in sums of £ s. d. on the day book. The address, as far as I am concerned, has been an incentive to me to go on and do my best to prove to my clients and my country that I am a fit and proper person to be in my job."

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York Meeting*

Mr. J. W. Procter, opening the Discussion, expressed the regret felt by all at the inability of the author of that admirable paper to be present that day, and continued: I am in complete agreement with the conclusions of Professor Dalling in general. The paper broaches questions of veterinary politics and all manner of topics which can be discussed from many angles. I personally am not the person to offer criticism on the scientific points because I am not a particularly scientific person. It appears to me that the veterinary surgeon will have to broaden his views on general educational policy, which probably represents the nearest way to arrive at Professor Dalling's Utopia, and that brings me to the Loveday Report, with which I am in wholehearted agreement. I feel that we should be in more direct collaboration and co-operation with students of the basic sciences. If veterinary surgeons were educated alongside these men, certainly in after life, they would not only be appreciative of our abilities but would be much more ready to co-operate in any scheme which they undertook for the control of animal disease. In my view there is no doubt—and that does not apply just to veterinary medicine and surgery—that the question of prevention will definitely predominate henceforth: as the old adage has it, "Prevention is better than cure." My own experience is that farmers are now seeking advice on animal husbandry, the control of diseases and so on, with the result that the practitioner, when he comes across a sporadic condition is not nearly so afraid to confide to the client that he is not going to diagnose the condition immediately. Twenty years ago we felt we must say something or the farmer would think we did not know our business. The average agriculturist is to-day more educated also in his own calling and appreciates the difficulties with which the veterinary surgeon is confronted.

I find that agriculturalists feed their horses more irrationally than the horse owner in the towns, with the result that they get many more dietetic disturbances in farm horses than in town horses. That might be due to the altered conditions of labour and the more rational feeding carried out with the town horse. So far as cattle are concerned, my feeling is that there is a wide field and scope in biochemistry. Professor Dalling mentioned tuberculosis and abortion in particular. These matters are in hand and we are hoping that before very long we shall be able to give more assistance to the farmer than we are at present. When I attend a case of mastitis I feel I am robbing my client because of the amount of assumption on which I have to go. My treatment is empirical. The instances in which methods of control could be adopted are none too plentiful although they do exist.

With regard to tuberculosis, I feel we are beginning at the wrong end. We apply the tuberculin test and slaughter the reactors. But what steps do we take to endow young stock with health and prevent them contracting tuberculosis? It is a common thing, when one goes to a farm, to find a cow with something wrong with the udder and hear the farmer say, "Oh, it will do to rear a calf." That is the first thing that happens. Something could be done in animal husbandry to teach farmers that such things are definitely wrong. I am looking forward to the time when our scientists will put into our hands some vaccine or serum, or other agent, which will protect the young calf against tuberculosis. We are, I think, all agreed that control measures could be adopted against abortion. This is probably not the time to say much about what those measures should be. The practitioner in days gone by was very rarely consulted in regard to sheep and the only thing which has been done for sheep is the control of sheep scab cases by the Ministry. We are now consulted much more freely upon sheep conditions by farmers and I am quite sure we are of some help.

With regard to the pig industry, dietetics play an important part—I am speaking apart from scheduled diseases—and I am convinced that here is a type of practice which during recent years has been remunerative. I can see it is likely to provide a lot of work for some time to come. A few years ago we lived in what I might call a bacterial age, when any condition outside the normal was regarded as being due to some germ or other. Without ignoring that factor altogether, I believe that it has been very much over-emphasised in the causation of disease. At all events, I feel convinced that many of these bacterial diseases would not exert themselves to the extent they do were the animal economy of the farm endowed with the ordinary general conditions which are necessary to maintain good health.

I advocate closer co-operation with laboratories, which are definitely of help in advancing the knowledge of the practitioner. In my view, our educational system needs broadening, though our teaching is as good as and probably better than that of most professions. But if that teaching is given in a seminary where our undergraduates are not in a position to come in contact with the other scientific students, it is not likely to gain that full appreciation in after life to which it is entitled.

Mr. J. O. Powley expressed "the opinion of everyone present" in a tribute to the writer of the paper, the burden of which, he said, was essentially prevention. In that respect the veterinary profession and the medical profession were journeying together; they were on the highway to an extension of the study of preventive medicine. At the present time the losses of stock were very considerable. He had seen a flock of a thousand ewes on the Wolds and a loss of 250 from lambing sickness in one season. If a business man sustained losses like that he would go demented, but the farmer said "It is in the nature of things and we cannot alter it." The trouble was there had been no one to advise him in these matters. They were beginning to realise that the veterinary investigation officer—though

* Held on June 28th, 1940.

they derided him when he was first appointed—was of incalculable worth to the practitioner. But if they were going to get the full value they must have an extraordinarily good liaison between the officer and the practitioner. It was a good sign that during the last month or two the Agricultural Research Council had decided to send research workers into Yorkshire. They were getting rather tired of having to send to London every time they wanted some investigation: now they were to have a station on their doorstep it would be of great value to the practitioners. They would do everything they could to help the investigation officers, of whom they had got two in the room and both of whom were doing extraordinarily good work. Professor Dalling had mentioned the necessity of keeping abreast of the various reports from the research institutes. But the trouble was these reports were not easily accessible; they seemed to be published in obscure journals and the ordinary practitioner had not access to them unless he was prepared to pay several guineas. He hoped the editorial committee of the *Record* would try to get these publications brought to the notice of the profession through their own periodical. Urging constant contact with the research institutes, Mr. Powley pleaded for a better state of affairs than used to prevail when one sent something to the Research Station and never heard any more of it.

A member said they had two investigation officers in his own county and he found them very useful indeed. They worked very harmoniously with the practitioner. They never communicated with the farmer direct; if he wanted to send a report to the farmer he always sent it through the practitioner, and, added the speaker, "I am very glad to get his advice to clear up some of the messes we get into."

Mr. J. P. Cook, Market Weighton, said that he agreed to a certain extent with what had been said about the value of preventive medicine but many veterinary practitioners had not time to study it. He found it difficult to combine the study of preventive medicine with earning a livelihood. He thought it was a great mistake for them to try to advertise themselves by this gratuituous information. He agreed they should equip themselves as thoroughly as they could with the best of information, but that did not mean on the scientific side: he was of the opinion that the scientific side of the practitioner's work was very much overdone; he could see the time coming when the general practitioner would only have the smallest jobs on the farm left to him. At times he felt bound to conclude that he could have made just as good a living if he had not been to a veterinary college at all but had simply had an apprenticeship with a good practitioner. The extension of the College curriculum for another year was an absolute catastrophe. It should be four years and they should insist that the students had six months on a farm and six months with a practitioner. In the future, if they were to continue to be of assistance to the farmer, while they would not have to dismiss the scientific side altogether, at least they must pay more attention to the working side of the ordinary practitioner's life.

Mr. J. H. Gillespie expressed the opinion that unless the veterinary surgeon had had the good fortune to have been born on a farm he should be made to spend six months there. The profession made a serious blunder in not insisting that every aspirant for veterinary honours should have a period with a good practitioner and a similar period in agriculture. He was a strong believer in research institutes. Professor Dalling's paper was full of commonsense. He suggested they should infuse more energy into their work and not be so keen about £ s. d. He thought they could all make greater use of the research institutes.

Mr. Lyle Stewart said that Professor Dalling's paper touched the core of things in the veterinary world. Mr. Gillespie had heartily endorsed Mr. Cook's remarks, which he thought were, in general terms, absolutely retrogressive and yet at the same time he recommended everyone to make more use of the research institutes. Whatever happened in the future they must expect changes and if those changes did not represent progress then they would go down altogether. They were a learned profession with a five years' course and they should "set the pace." Farmers would not look up to them if they did not get the information from them that they wanted. He earned his living as a veterinary investigation officer, that much-maligned person, but it was possible to be an investigation officer and at the same time a loyal member of the profession. They saw problems from rather different angles. They endeavoured to make veterinary science more scientific and that was what they must all aim to do. If he had depended for his material for research upon material sent in by the veterinary practitioner he would have atrophied long ago. He did not wait for it; he went out and got it himself. He was very anxious to help the practitioner. He thought they should endeavour to make more use of laboratories because it did not detract one whit from the reputation or skill of the practitioner if he had to admit he was a bit doubtful and would like a second opinion. He believed there was a great opportunity now for their profession and they should embrace it with both hands and go from good to better.

Mr. W. H. Campbell agreed that laboratory work was indispensable, but said that the difficulty was to get in contact with laboratory workers. He believed in every case where it was possible the laboratory worker should be consulted. The trouble in the past had been that the laboratories were at a distance and he had in the past spent much time and money in sending specimens and had never heard any more or got paid for them. He criticised the veterinary colleges in that in the last ten or twelve years they had catered for the Ministry of Health and not for the animal owner at all. He had had a good many students from the colleges through his hands and he found they were very nice men, better educated than they used to be, but not better "veterinarily educated," for they were not taught veterinary practice at the colleges and they were practically useless to the veterinary practitioner. Some were dangerous and took more looking after than they were worth. His view of the veterinary colleges was that there were too many medical teachers and too many medical examiners. He did not believe the medical teacher was the correct man to train the veterinary practitioner.

Mr. S. L. Hignett spoke of the paper as striking the ideal balance between the practical and the theoretical—an achievement for which the name of Dalling was synonymous. They had only to think of his investigations and their practical conclusion in such diseases as lambing dysentery and canine distemper, to appreciate this. They all realised that they would have to do more along the lines of preventive medicine; at the same time, they must not lose sight of the fact that animals would have to be treated and that there was still work to be done in important lines of treatment for various diseases. There was the case of poultry and of sheep. So far as the practitioner was concerned it was hardly a paying proposition to treat individual hens or individual ewes. Professor Dalling had pointed out that the ideal way of dealing with contagious abortion was by frequent blood tests and the segregation of the reactors. But they could not practise segregation in a flying herd, or when in the same herd of 20 cows 18 reacted to blood tests; and it was in these cases the practitioner had to consider other ways and means. There had been much controversy as to the use of live vaccine; actually some excellent results had been obtained in America by the use of attenuated vaccines, but unfortunately they could not be imported into this country. McEwen had been doing work along these lines in the south-east but it was too early to say how effective those lines of control would prove to be. Virulent live vaccine was hardly to be recommended, but on the other hand it was the only line of treatment open to the practitioner. So far as he knew no reliable attenuated vaccines were on the market.

With regard to mastitis, the Agricultural Research Council had established a centre at Leeds for research into the control and treatment of bovine mastitis. They had herds in the county which were under mastitis control and also several herds under abortion control.

While he disagreed very strongly with Mr. Cook and

Mr. Gillespie about the value of preventive medicine, he agreed with them concerning the practical training which the students received. When the course was extended from four to five years there should have been a greater increase in such training. In addition to the training with a practitioner he thought that before proceeding to a veterinary college it should be compulsory for a student to spend some time on a farm. He desired to thank every practitioner for the assistance and co-operation all had given him in his duties since he had been in Yorkshire.

Mr. E. P. Edwards then addressed the meeting, as follows: It is the misfortune of all of us that Professor Dalling has not been able to be here to-day to deliver his address and to reply to the many points raised in this animated discussion, but greatly as we regret his absence, it is evident that you all feel it has been well worth while coming quite a long way to hear the thought-provoking messages contained in his paper. The President asks me to wind up this discussion, which does not mean that I shall presume to reply to any of the points raised, for only Professor Dalling himself can do that, and has promised to do so when the report of the meeting is published. Since, however, I have been fortunate enough to attend three of this series of addresses which Professor Dalling is giving before the Society, I may perhaps be allowed to give you for what they may be worth, a few of the impressions they have made upon me. First of all it seems to me that Professor Dalling wishes to impress upon the profession that we have entered upon the Era of Preventive Medicine. Without in any sense belittling or forgetting the permanent and present importance of purely curative medicine and surgery, he clearly points out that the future progress of the work of controlling, preventing, and of eradicating our many animal scourges, lies in ever-increasing measure in the application of the principles and practice of Preventive Medicine. Although as a practical and generally practised part of the Veterinary Art, this preventive side is a comparatively modern side, it is still, as a conception, in reality very ancient. That " prevention is better than cure," was in the ancient civilisations of China and Japan, the first axiom of their medical systems. So much so, that, as you know, in those far off times and countries, and with strict logic, the patient only paid his doctor when he was well, and, though one cannot vouch for this as historical fact, still I should not be surprised that in China or Japan they chopped off the poor doctor's head when the patient fell sick—just to " let the punishment fit the crime." That is by the way, but we may reflect that if the conception of the principle of prevention was " practical politics " in those primitive times and countries, how much greater are, or should be, its potentialities in our own time and country, with its vast wealth of knowledge and the resources derived from modern research.

My second impression is that Professor Dalling wishes us to realise that the application of preventive methods to the problems of modern agriculture are not only the concern of our profession, but are the joint concern of the agriculturist and the veterinary surgeon. In fact that they must *begin* with the farmer himself, his methods, and the whole internal economy of agriculture. This may mean such things as the correction of errors in genetics, dietetics, housing or hygiene, and in the preservation of a proper mineral balance in the land, and in the food for animals raised from it.

Personally, I often wonder whether there should not also be included the avoidance of the dire results which may follow the intensive commercial exploitation of the natural functions of our farm animals and birds. In respect of at least some of these scourges, one may well ask whether they are not largely the price to be paid, and now being paid, for the sins of the farmer himself in these directions. One may ask for example, whether the 2,000-gallon cow is not just an expensive prodigy, doomed like most prodigies to fade and succumb; and is our competitive milk recording, to a great extent just so much valuable energy expended in a misdirected and harmful cause? In the modern husbandry of poultry, it seems only too evident that excessive exploitation, with the substitution of artificial for natural conditions, has reaped a crop of diseases previously unknown, and which have taken disastrous toll in the industry for the violation of nature's laws. Again, it seems to me that Professor Dalling clearly indicates that it should be the place of the veterinary surgeon to lead in advising the farmer as to all matters which concern the maintenance of the health of his stock. He warns us, in no uncertain manner, that it is very urgent that we should show and assert our ability and desire to take such a lead, and that unless it is done soon the profession may miss its opportunity altogether, and agriculturists will turn to other bodies for such leadership. There would indeed appear to be indications that this is already happening. In the discussion at one of these meetings, we heard of a veterinary surgeon holding an executive position at one of our agricultural colleges, speak of agriculturists doing, or attempting to do, work that veterinary surgeons ought to do. He spoke of an important committee of influential farmers set up to examine problems largely of technical veterinary interest, and he told us that the advice of the one—and only—veterinary surgeon on that Committee was frequently either not asked for at all or was ignored. Such instances, and this is by no means a solitary one, seem to indicate that agriculturists are rapidly drifting in other directions than our profession in search of guidance in matters of animal husbandry, and it surely behoves us to awaken to the position before it is too late. In this connection, too, there would appear to be a necessity to extend and revise the curriculum in our colleges so as to give adequate teaching in some new subjects.

Turning in another direction, regarding the tendencies of agriculturists in relation to our profession at the present time, I think that one of the most remarkable and disturbing of recent years is the great increase in quackery and home doctoring, some of which is positively dangerous. Every practitioner knows to his cost the increasing extent to which farmers are using, not only advertised nostrums, but also various biological products which they can and do buy, without restriction. I am not at all sure also, but that this tendency is being fostered, or unwittingly encouraged, by organisations within, or closely associated with our profession, organisations which disseminate " the little knowledge that is dangerous "—dangerous because it so fascinates the mind of the layman, and so easily leads him out of his depth.

Regarding the future part to be played by Preventive Medicine, we have heard the criticism made, that it may be all right as an ideal, but that it can only succeed at the expense of the practising veterinary surgeon, and because the farmer will not pay for advice alone. It is a criticism which may have varying practical substance, but at any rate it is one that has to be met and solved if preventive medicine in its widest sense is to become " practical politics." Means must be devised to make the economic position of those devoting their lives to the work not only a secure one, but also one to attract the best brains, and give adequate reward for their labour. In this it is surely right and natural to look to the State and the national resources for help, for it is a matter of national concern, and could not make progress without some form of State subsidy. In this connection, too, it would seem that at long last the agricultural industry, either itself or in conjunction with the State, will need to set up a scheme for the national insurance of animals on a national basis. There are several things in relation to the part of the practitioner, to which Professor Dalling evidently attaches great value and importance. One is the need for providing more and more regional laboratories to which material can be sent for guidance and diagnosis, and from which reports can be secured without unreasonable delay. Another is that means may be found to make the literature of modern research readily available to the busy practitioner. This literature is so voluminous and ever changing, that its mass needs sifting and " editing " if it is to yield for the use of the clinician that which can be readily put to practical trial

and use. In this connection, as most of you know, this Society intended and still intends when times become normal, to form a clinical section, part of the function of which will be to endeavour to collate and sift such material as applies to clinical work. Another closely related matter is the organisation of regular "refresher" courses on the lines carried on by the medical profession. State assistance has been given the sister profession for this purpose, but so far denied to us; still, during the last three years many courses have been organised with great benefit within the profession itself, and the movement ought to be widely extended.

In his review of the part of the practitioner in agriculture, Professor Dalling says much that will be stimulating and encouraging to us. He has made it quite clear that he regards the part of the practitioner as an indispensable part, and equally clear that he considers him capable, and becoming increasingly capable, of playing a foremost part in the work of the future. He has expressed the view—not very fashionably held in some quarters of late years—that "the practitioner is still the backbone of the profession." We welcome such words of encouragement and assurance coming from one with such intimate knowledge of our problems, and such wide experience of the modern methods with which they must be met. We trust that their weight and their authority may be understood and recognised in the right quarters, for, if and when there is an extension of the work of the State service, it is vital that the practitioner shall take his full place in that work. We all know, and members of this Society perhaps in particular remember, how long and strenuous was the fight that was needed before even the present place of the practitioner was secured in that service, a place which many of us still think is neither as full nor as secure as is due to the main body of the profession. This Society has always worked for the best interests of the profession as a whole, and believes that a full recognition of the claims of general practice in Public Health work is essential to those interests. It behoves us therefore to keep the Society strong and progressive so that, if need be, it shall again voice the just claims of the practitioner. If in pointing the road we have to travel, Professor Dalling speaks words of appreciation and encouragement to us, he also brings to us a challenge, a friendly challenge to further and closer co-operation with research, and to make ourselves still more fit and worthy of sharing in the future triumphs of real team work. We are as a Society proud and grateful that Professor Dalling, as one of the busiest as well as most distinguished of our members, has come amongst us to deliver his message to the profession, a message the significance and importance of which will, I feel confident, grow clearer and greater as the days go by.

Glasgow Meeting*

Sir Arthur Olver, opening the discussion on the paper which, in the absence of Professor Dalling, was read by Mr. H. W. Steele-Bodger, said, in the course of his remarks, that, in the main he was much in agreement with the paper. For many years he had experience of animal husbandry and the organisation of veterinary work in different countries. During the last war he worked with Sir John Moore. It appeared to him that we had gained a great deal of knowledge and much had been imbibed by the profession, yet, on the other hand, we had not advanced as had other countries—such as South Africa, for instance, where great advances had been made.

"In the last war" (proceeded Sir Arthur) "the veterinary profession was engaged in a foreign field. In this war the home front is going to be the decisive factor. The profession can help in the nutrition of the people by making the best use of its livestock, firstly in controlling disease, secondly by proper feeding, and thirdly by making the best use of animal by-products.

"What seems lacking, as compared with other countries, is an organisation to co-ordinate the work of control. What has been done in other countries is astonishing; they are adopting means of controlling disease on much bigger lines and it is time were were mobilised, if I might use that word.

"Now, at this very moment, is the time for organised development of animal husbandry. Where they have been most successful is where this has been placed under veterinary control. I feel the future lies in the way that Professor Dalling has laid it down in his paper. Now is the time for action or otherwise we shall miss the opportunity."

Dr. P. S. Watts thought we should collaborate with people who are not necessarily practitioners. The animal husbandry department of a West of Scotland Agricultural College had become active in regard to mastitis. We had missed our chance in nutritional diseases of sheep: this college had managed to get in there first and was reducing losses. They were taking British and American results and using them. We should collaborate with such people. If we could get practitioners in that area to organise themselves and apply what we already knew in regard to nutrition and disease we could enhance our status in that area.

Professor Weir thanked the essayist for an excellent essay with which he was in perfect agreement. He could go further than Professor Dalling with regard to advances made since he was qualified. In the last war we made great advances and he hoped it would not take another to enable us to do the same again.

Practitioners are not faithful to the N.V.M.A. and many are not members: could not the N.V.M.A. do something to increase the membership?

He heartily agreed that we should collaborate with agricultural colleges. Each could teach the other something. Where, however, was the £ s. d.? Until the Government could help us there was not much hope for better teaching. We turned out good men but we wanted better. He did not know enough of animal husbandry and would like to know more. "We of the N.V.M.A. gain knowledge by attending meetings of the association, but unless practitioners attend they will not learn," concluded Professor Weir.

Mr. Hugh Begg, Senr., was disappointed not to make contact with Professor Dalling. This, said the speaker, had been a great paper and "just the essence of what the man is"—modest in his beginning but making great strides. He felt there had not been enough said as to where research has failed. We still lost a great deal of value, even in diseases which we had almost solved, because agriculture in its backwardness would not take it up. Let them think of the great loss of milk there is to this country at this very moment through this.

We must do more in this time of war and plan ahead with a scheme for post-war periods.

There were more deaths in animals than one heard about—sheep in particular, because they did not get enough food. Every man should be compelled to report all the losses he had of food animals and then the matter could be put under the care of the proper person.

Professor Dalling had spoken of the advances in the last 25 years, but before that there were some fine men. His success was the measure of his personal effort to aid agriculture. Nowadays the veterinary practitioner secured spectacular results through the use of biological products. He would stress the need for the standardisation of tuberculin and urged that "doubtfuls" should be regarded as reactors.

Major McGregor having thanked the Society for the invitation to attend the meeting, said that the problem was, what action was now going to be taken? No doubt a great wealth of advice had been given to agriculture during the last 20 years, but were we going to look for the powers to put it into action? Surely freedom in these things was what we are fighting for. Did we intend to get compulsory powers for carrying out our plans? If so, it was interfering with the liberty of the subject. The trouble was that when things were given they were not valued; if they were paid for they were

*Held on July 3rd, 1940.

valued more. He would like to know what steps it was proposed to take to make the farmer toe the line.

Mr. G. Dykes observed that the paper opened up the whole problem of the animal kingdom in relation to the human population. He appreciated what Professor Weir had said, for he had hit the nail on the head, namely, education. Mr. Begg had mentioned the losses of which we never heard: these should be notified; £19,000,000 were lost yearly through diseases of animals. We should give students an even greater education. When he saw a bone, he liked to worry it, but this was too big for him to tackle. (Laughter.)

Mr. A. Thomson, having congratulated Professor Dalling, stated that if the Government was not going to find the money we must manage by ourselves. The practitioner and the laboratory worker had a common bond and a pool of knowledge and we should make that liaison more complete. We should be more co-operative-minded: this might possibly solve the problems of the laboratory and prove the means by which we might get some financial gain. He had in mind small animals and measures which we could use—for example, X-rays and facilities for the performance of bigger operations. If they could get all the veterinary surgeons in Glasgow together a common laboratory might serve to retain that unity. A veterinary unit could be established in large towns. The personnel of the Ministry of Agriculture were not, and never would be, in touch with these problems. We ought to envisage the time when veterinary surgeons worked, not for their own end, but for the profession as a whole.

Mr. A. Young said there should be closer liaison between the practitioner and the laboratory. He had hoped the Ministry would establish a veterinary laboratory in every division and every practitioner have the use of it. This would particularly help reduce losses in pigs, calves and sheep where practitioners could go no further than clinical examinations. He hoped this matter would come before the "Powers that be." Two years had been lost in failure to do this.

Mr. Robson, Junr., observed that, with regard to the application of knowledge, he knew of a disease becoming widespread and being dealt with by a committee which had no veterinary or agricultural members. They had been using veterinary products but results recently had not been good and now there was criticism of the veterinary product and the maker. We wanted the full support of agriculturalists. He knew of instances of the occurrence of widespread disease in which agriculturalists had not asked for assistance. Unless the practitioner could use biological products in his work he could not help agriculture. Who was going to pay for all this? If the Ministry had set up laboratories, then the collaboration of practitioners would have been more satisfactory and a definite advantage to the country.

Mr. G. F. Taylor thought the problem in Scotland was the lack of collaboration. Was there any hope of getting into closer touch with the Scottish Farmers' Union and with the laboratories? He was afraid the research institutes were more inclined to chase the farmer and not to help the veterinary practitioner to any great extent; often they were mere manufacturing institutions for distributing sera to the farmers.

They wanted a small committee of veterinary surgeons to collaborate and form a policy and force their opinion. They must keep preaching it until other people believed that what we said was true: he was afraid that was the only way in which they could hope for progress in Scotland. Practically every day they heard of cases of deaths of animals which they had never seen: they were taken as a matter of course and nothing was said.

Mr. R. M. Smith mentioned two diseases, tuberculosis and contagious abortion, about which, in his opinion, they should gather all the information they had and put it into practice. As far as abortion was concerned, every animal ought to be immunised with a non-virulent type of organism. In Ayrshire, they had herds cleared by the agglutination test and they had all broken down. It was no good for clearing small areas, though suitable in large areas. The same applied to tuberculin testing where there was a shifting round of animals. All animals should be immunised against tuberculosis. In regard to mastitis, let them all pool their knowledge of that disease and a lot could be done. Farmers would collaborate.

Dr. Watts stated that the difficulty attending the use of living vaccines was that they might still infect the human being, though he thought this risk was over-estimated by the medical profession. Until all milk was pasteurised they could never get over the objections of the Ministry of Health.

With regard to mastitis, there was a Committee of the Agricultural Research Council which was very worried as to how far segregation was of value for mastitis. In some herds results were good with acriflavine and sometimes with sulphanilamide. It was up to the practitioners to make use of these.

Mr. Campbell expressed interest in Mr. Begg's remarks on the moral liability in respect of his losses. He himself received a lot of help from the existing laboratories. We must show the public that we had got the goods to deliver. Mr. Campbell expressed the hope that Mr. Steele-Bodger would tell them something concerning the work of the Survey Committee which in his, Mr. Campbell's, opinion would be the most important Committee ever set up by the N.V.M.A.

Mr. Steele-Bodger shared the disappointment of members present at Professor Dalling's absence though, so far as he was concerned, the disappointment was softened by the fact that it had created an excuse for him to be present. He had much enjoyed the stimulating discussion and would do his best to reply to the points raised.

He agreed with Mr. Campbell as to the importance of the Survey Committee and explained that this Committee was formed following a resolution which was passed at the Annual General Meeting of the Society of Veterinary Practitioners after the meeting had heard this self-same paper of Professor Dalling's. The resolution, which was as follows, "That the N.V.M.A. be asked to set up a Committee to consider ways and means whereby the veterinary profession can be used to the greatest advantage in the control of the health and disease of domestic animals throughout the country," had been accepted by the Council of the "National" which, in turn, had instructed the Finance and General Purposes Committee to take the necessary action. The Committee was a large one, representative of all branches of the profession drawn from all parts of the country. To facilitate the work of this Committee an Executive was formed, again representing all sections of the profession. The Committee had met several times and had decided to divide its labours into two, to formulate a short-term policy to deal with urgent matters and to prepare a long-term policy. Contact had been made with the National Farmers' Union and as a result of these preliminary discussions a Joint Committee N.V.M.A., N.F.U., had been established, and the Survey Committee had undertaken to prepare a scheme for submission to the Union for their mutual consideration, as to how best the services of the profession could be utilised in relation to the preservation of health and the control of disease. Mr. Steele-Bodger expressed his confidence that when these schemes were put into operation there would be more than enough work for every member of the veterinary profession.

It was proposed, in the first place, to draw up schemes for the control of mastitis, abortion and sterility. The possibilities for the control of temporary infertility and sterility were good, but they would have been much better had the Council of the Royal College of Veterinary Surgeons and the five veterinary schools realised the importance of this disease 16 years ago when the profession had had the opportunity of listening to the masterly address at Aberdeen by Professor Folmer Neilsen and witnessing the demonstration of his technique. Since that time no graduate should have emanated from any of the colleges without being thoroughly familiar with that technique.

In spite of the initial discouragements, Mr. Steele-Bodger was still hopeful that the Animal Health Division would support the Association in its efforts. He could assure the meeting that the Survey Committee was going to be a hard working and a hard worked Committee, and like Mr. Churchill, all he could offer members of that Committee was blood, sweat and work, but he was confident that they would succeed. (Applause.)

Mr. Campbell said that he would like to endorse all that Mr. Steele-Bodger had said concerning the work that had begun. He thought the meeting would agree that though they were disappointed at the absence of Professor Dalling, they had had a good substitute. (Hear, hear.)

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Professor Dalling's Joint Reply to the Discussions at Chester, York and Glasgow

There is not the slightest doubt in my mind that the future of the veterinary profession lies in the maintenance of health and the prevention of disease in the livestock throughout the country. No matter what organisations may be set up in the future in connection with the profession, the value of the profession will always be judged by the results of the work carried out by the general practitioner. As I said in my paper, the practitioner is accommodating himself to the changing conditions of the relationship between our profession and agriculture. We, as a profession, are taking our place alongside other scientific bodies in our research work. We are playing an essential part in the various investigations and are very largely working hand-in-hand with the different bodies concerned with the health and disease of livestock.

Among the many problems we now have to overcome one of importance is the dissemination of the latest information derived from research work carried out by all the allied workers. Not only must this knowledge be made known to the veterinary profession generally, it must also be given to the livestock owner so that he can appreciate and know what can be done for him by the veterinary profession. I appreciate to the full the difficulties, especially of the practitioner, in getting to know what is happening. In the discussion in Edinburgh, I dealt with the point to some extent. It is unfortunate that there exists even to-day, a feeling in the minds of some members that the practitioner is tending to be too scientific in his outlook. We cannot be too scientific. The basis of all our work is dependent on science but we must not err in carrying our work into realms of pure science, forgetting the practical application of our findings. Once again the word "Utopia" has been used in connection with my aspirations. As I said in Edinburgh, although Utopia may never be reached, if we aim at it, we shall progress. It is indeed encouraging to read that so many practitioners see eye to eye with me concerning the use which can be made of laboratories in every-day practice. Laboratories are an essential part of the art and practice of veterinary science to-day. Their usefulness is apparent all the time and I for one shall never be satisfied till I see a large increase in their number, though perhaps not run exactly on the lines which pertain to-day. A beginning has been made by the introduction of the veterinary investigation officers who do so much good work in the profession. It is encouraging to read the remarks of practitioners on their close collaboration.

When we consider the education of a veterinary student, we must ask ourselves for what purpose he is being trained. Are we training him as a practitioner, to be conversant with all the conditions which he must meet in the field; or are we simply giving him a general education in science with special relationship to the health and disease of animals? My view is that we must lay a solid foundation in general science but we must not lose sight of the fact that following this essential training, he is to be a veterinary surgeon—he is to become more than a person with a good, general scientific training. He must be taught to understand *the animal* in health and disease and to apply his scientific knowledge to that special problem. No student who is to become a veterinary surgeon can be allowed to neglect a general acquaintance with animals under their various conditions of life; no matter how well acquainted with the general or specific aspects of science a man may be, he cannot claim to be a veterinary surgeon unless he is familiar with animals in their every-day life. Such knowledge can only be acquired by experience and practice. It must be taught to the student if he has not already acquired it. I think there is much to be said for compelling students to spend long periods before or during their studentship on farms where they will be taught the general principles of agriculture including livestock management. Their first-hand knowledge of animals will form a sound basis for future observations on disease.

It is true that bacteria *per se* may have been emphasised as the cause of the disease. While we must admit the part infections play in disease production, there are many other factors of much importance which must never be omitted in considering the maintenance of health and the control of disease.

The veterinary profession is, as it were, at a cross-road. We must have some policy whereby we are to be of the maximum amount of assistance to the agriculturalist. I make bold to say that we are far short of that state at the present time. As the result of the resolution passed at Birmingham, the "Survey" Committee of the N.V.M.A. has been formed and is now working hard to find a solution to the problem it has been set. Daylight is beginning to appear. I am confident that in the very near future you will be asked to attend a meeting when the results of the Committee's work will be put before you and when you will be asked to criticise its recommendations. I know from a perusal of these and other discussions that you agree now in principle with what we have in mind, and that concerning the details of any scheme we may formulate, you will be prepared to discuss it fairly and assist us to remedy its shortcomings.

MINISTRY OF AGRICULTURE NEWS SERVICE

Storing Oil Cakes.—Farmers who are laying in winter supplies of oil cakes are again reminded of the importance of storing them carefully. All stores should be dry, with adequate ventilation and preferably wooden floors. Cakes can be stored on concrete, but, if so, they should, if possible, be laid on wooden coamings. The bags should not be stored more than four feet high if laid horizontally or 1 bag height if stored upright.

As opportunity offers, farmers should turn over their stocks by utilising part of the reserve and replacing by supplies bought for current consumption.

Under suitable conditions no difficulties should be experienced in keeping groundnut, linseed, soya and palm kernel. Copra and cotton cakes need more careful watching; the stack should be broken down on the first sign of mould or heat developing. Extracted meals need still more careful supervision; unless finely ground they may heat.

The advantages to the farmer of storing in advance are that he will be able to begin the autumn feeding season with a supply in hand at a time when distribution may have become difficult. He will obtain lower rates and lower transport charges for bulk quantities and will avoid such additional costs as in-and-out of store charges. Dairy farmers in particular should take advantage of this opportunity to put by cake as a reserve for next winter. In addition to straight cakes and meals, the September allocation of compound cakes is being released to merchants during the present month and farmers will be able to buy advance supplies of these.

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The Minister of Agriculture proposes to appoint a domestic poultry-keepers' council to assist domestic poultry-keepers in war-time, particularly in making the best use of household and garden waste and purchased feeding stuffs.

THE VETERINARY RECORD

August 31st, 1940.

THE WELFARE OF LIVESTOCK—THE VETERINARY OUTLOOK

IN another part of this issue we publish a valuable address together with no less valuable discussions upon it which during recent months have taken place in different parts of the country.

The subject debated there is of such importance that it would warrant us in using the most forceful language at our command to urge every practitioner, nay every member of the profession, to read the address through carefully and to ponder every thought it engenders.

It is no easy task to write editorial comment upon what is a survey, firstly of such of our professional achievements as are germane to the subject, secondly, of our present and future developments, and thirdly of some of our shortcomings, limitations and the means needed to enable us to realise more of our potentials. We prefer to direct our readers towards a realisation of the magnitude of the fabric upon which the welfare of livestock is built in so far as the veterinary profession is concerned, rather than to succumb to the temptation, however great, to select some subject or subjects for particular comment.

Forces beyond our control, some economic, some climatic and some commercial, have determined that animals shall be kept under unnatural conditions. By fixation of breed type, genetic selection, manipulation of environment, and other modifications, man has altered the balance of those natural phenomena which provided the feral animal with its necessities and were, generally speaking, adequate for the maintenance of health. Where conditions were fundamentally adverse, this or that species failed to survive and moved elsewhere, temporarily or permanently. Population densities altered in direct accord with natural laws. In nature we still see the operation of ecological readjustments and balances, in so far as wild life is concerned.

The imposition by man of artificial conditions of life has created a large series of differing but closely inter-related problems. The more artificiality is intensified, the more numerous and more difficult of solution do the problems become. The general task which the veterinary profession in this and other countries has to face, is so to guide and advise the animal-owner that he may avoid known pitfalls, and to help him to restore health and minimise his and his country's loss when he meets with misfortune in the form of accident or illness among his stock.

From a close perusal of Professor Dalling's paper with the discussions which it has provoked, and taking account of other available evidence, we feel that it would not be inappropriate to discuss just how far we have progressed in the fulfilment of our task. For many years the general activities of the agriculturalist were closely concerned with agronomy. The soil was studied in relation to plant growth; then plants and crops received attention, were improved, and their production and husbandry intensified. Not until the decade or so immediately preceding the war of 1914-18 were animals and methods of management of livestock made subjects for more intense research. The world disturbance and the need for reconstruction gave a tremendous stimulus to this work, and consequent upon this stimulus more changes have been seen in fundamental methods of animal husbandry during 20 years than in probably the 50 or 60 preceding years. The list of changes is truly impressive. It includes the introduction or popularisation of such diverse factors, each of which has a direct repercussion upon the welfare of livestock, as the following: the milking machine, modern oilseed crushing machinery, the production of baby-beef, grass-drying, the use of balanced rations, modern ensilage, milk-processing, the intensive battery and other systems of poultry husbandry, pig-tethering systems on the one hand and the intensive fattening house on the other, and yard feeding of sheep, while many other changes of a more restricted nature have played a part. But in addition to these, two other important factors have operated. The whole tempo of scientific research upon problems of animal husbandry has been speeded up, largely through the increase in the number of agricultural and other research institutes. Before the war of 1914-18 the number of those doing active research upon animals numbered under 10; now there are nearer 50 and each is staffed by trained men who have opportunity, time and finance for carrying out research of some kind. Then there is the lessening of the "lag" between discovery and application. In the older and more spacious days, it took time to disseminate knowledge, and it might well have been years before a new method became widely adopted. The farmer was more conservative, there were no broadcast talks, and the delay was realised acutely by the more ambitious and pushful of the experts. Apart from the steadying influence of Central Authority, which still imposes a lag, the discovery of to-day may well become the practice of to-morrow.

Coincidentally with all this progress in animal husbandry, research work upon disease problems has made equally important contributions, and the practitioner of to-day has before him a truly formidable task, and moreover a task the magnitude of which his agricultural critics (who see one side only) are not fully aware. It has been imperative that he should keep himself alive to the latest discoveries in veterinary surgery and medicine, and even the most severe critic of his shortcoming in other directions cannot often justly accuse the general practitioner of having failed to keep himself abreast of the times in essentially veterinary matters. It is perhaps small wonder that he has found a difficulty in maintaining constant touch with all

the facets of that most comprehensive subject, animal husbandry.

Once again in the life-times of most of us, war has come, and once again we are experiencing sudden and revolutionary changes in fundamentals. Among other things, our livestock must make its contribution, and the tempo must be increased. In our analysis earlier, we made reference to the essential function of the veterinarian. Now even more than during peace, we must fit ourselves to give the best assistance in our power, not only to minimise loss from accident, injury and disease when it has occurred, but even more so to prevent it whenever possible. Great Britain has had to put its trust in the veterinary profession during emergencies of great severity in the past. The records of the R.A.V.C. during the war of 1914-18 and of the whole profession during eradication campaigns against bovine pleuro-pneumonia, glanders, rabies, and more recently foot-and-mouth disease, are records of which any body of men might well be proud. There is still much work to be done. Among cattle we still have the so-called "four major scourges," which will occupy much time and attention before they are satisfactorily controlled. But it is imperative that they be brought under control—and that forthwith. The knowledge which would enable great savings to be effected is available. We cannot remain satisfied any longer. And everyone of us must immediately take a far greater interest in the broad aspects of the maintenance of animal health and the achievement of good husbandry. These are not mere academic matters. They are in the fore of our endeavour. There is leeway to be made up, but as before there is every indication that the profession has an outlook sufficiently fluid and adaptable to undertake the work, and it must always be remembered that in our professional training the basic foundations upon which to build a solid super-structure have already been laid.

Readers will remember that the Association has recently set up a Survey Committee to consider ways and means whereby the veterinary profession can be used to the greatest advantage in the control of the health and disease of domestic animals throughout the country.

The work of this committee is discussed in the editorial which follows.

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THE "SURVEY" COMMITTEE

> "That the N.V.M.A. be asked to set up a committee to consider ways and means whereby the veterinary profession can be used to the greatest advantage in the control of the health and disease of domestic animals throughout the country."

THE "Survey" Committee was set up by the Finance and General Purposes Committee following the adoption by the Council of the above resolution.

The personnel of the committee is representative of the various activities of the profession and consists of members from all parts of the country. The main committee is necessarily fairly large. A small executive was formed and it is this body which meets frequently and studies the problems as they arise, reporting from time to time to the main committee. This executive remains representative of professional activities.

It was decided at the first meeting of the executive that the work to be undertaken by the committee can conveniently be divided into two parts—(*a*) the preparation of a short-term policy dealing with matters now demanding urgent attention and capable of producing early results of benefit to the nation; (*b*) a long-term policy concerning the future application of modern veterinary knowledge to agriculture.

A number of meetings of the executive and one meeting of the main committee have been held and the subjects of mastitis, contagious abortion and sterility in dairy cows have been fully considered and discussed. In order that the latest information on the research work and methods relating to the control of these diseases could be available to the committee, members of the profession and representatives of allied sciences who have carried out investigations in the laboratory and in the field and who have had experience in the control of these conditions, attended some of the meetings and took part in the discussions. The result of this work is that the committee has prepared a First Interim Report and Recommendations concerning some of the Diseases of Dairy Cattle.

Discussions are now about to take place concerning other diseases of dairy cattle and at later meetings, diseases of some of the other farm animals will be discussed in a similar way.

The work of the committee for some little time to come must be concerned essentially with the short-term policy. The long-term policy is a matter for the future. Any short-term policy, however, which may be brought into operation in the near future will be of such a nature that its extension will form a sound basis for a long-term policy.

From time to time records of the work of the "Survey" Committee will be published, either as articles in the *Veterinary Record*, or as special supplements and when the committee has reached a stage in its deliberations when final recommendations can be made, they will be presented to the profession.

The "Survey" Committee is probably one of the most important committees ever set up by the National Veterinary Medical Association. The results of its labours may have far-reaching effects concerning the future of the veterinary profession. There is need for rapid action in order that the profession can, at the earliest possible moment, play a greater part in the maintenance of some of the

essential food supplies of the nation (especially, milk and meat). On the other hand, the consideration of a future long-term policy may well occupy the attention of the committee for a very considerable time.

There is little doubt that the veterinary profession can now be used to a greater extent than ever before in the control of diseases of livestock, with consequent benefit to agriculture and the nation. It is with that point in view that the committee will make its recommendations for immediate action. Contact has already been made with the National Farmers' Union and a small joint committee has been set up to examine recommendations which the "Survey" Committee will make. Further, a joint committee with the Royal College of Veterinary Surgeons has been formed, which will consider how best the agreed recommendations can be implemented. Already this joint committee has had a meeting. It is also of considerable importance that the Chief Veterinary Officer, Animal Health Division of the Ministry of Agriculture, who attended the joint meeting of the National Veterinary Medical Association and the National Farmers' Union, should attend the meetings of the executive and main "Survey" Committee.

There is no time to lose in evolving a scheme and in putting it into operation. The "Survey" Committee is working at full pressure; at an early date its recommendations concerning a short-term policy will be available for discussion by the profession.

ABSTRACTS

[THE CONTROL OF CHRONIC STREPTOCOCCUS MASTITIS. Minett, F. C. (1939.) *J. comp. Path.* **52.** 266.]

This article describes the progress of infection with *Str. agalactiae* in a small self-contained herd. At the first test, the examination of the quarter milk samples of 18 cows showed that three were infected, but throughout a period of two years' supervision during which 18 tests were carried out, 22 out of 29 cows were found to be harbouring this organism. During this period, however, no special precautions were taken to limit the spread of infection.

The presence of *Str. agalactiae* in milk samples was sought for by the following tests: (1) by plating gravity cream in ox-blood agar; (2) by plating sediment in this medium; (3) by incubating the deposit from 10 c.c. milk in serum-glucose-broth; (4) by incubating milk samples to which brom-cresol-purple had been added and plating those showing acidity.

In 29 instances where a milk sample was positive to one or other of the above tests, the order of pregnancy was as follows: method 4—24; method 1—15; method 3—14, and method 2—11.

In spite of the high incidence of infection revealed by bacteriological tests, it did not give rise to clinical abnormality of the infected udders or disturbance in the milk.

The author discusses the questions of pathogenesis and dissemination of streptococcus mastitis in herds and presents the evidence in support of the contagious nature of the disease. In addition, reference is made to recent work dealing with the infection rate in first-calved heifers which appears to suggest that *Str. agalactiae* may sometimes be acquired during calfhood and may be revealed later in the udder tissues at the first lactation. Minett states, in conclusion, that "in the meantime, it must be doubted whether the view is generally correct that by a series of cultural examinations applied to the milk of individual cows, it is possible to eradicate the disease relatively easily or quickly."

S. J. E.

* * * * *

[CAESARIAN SECTION AND OVARIOTOMY IN THE COW. Curtis, H. (1939.) *Vet. J.* **95.** 282.]

The subject was a white shorthorn heifer in-calf to a shorthorn bull and overdue. When first seen three days after rupture of the placental membranes there was a marked vaginal constriction beyond which the muzzle and tongue of a large calf was felt. Caesarian section was decided upon, with very grave prognosis owing to the toxic state of the heifer.

The patient was cast and secured on the left side. The instruments used were those employed in everyday surgery and were sterilised by boiling. Anaesthesia was by chloroform. The flank was shaved and then cleansed by mercuric chloride solution followed by iodine. A flank incision was made for 14 inches in a dorso-ventral direction, the muscles and peritoneum being cut singly. The right uterine horn was lifted into the wound and drained by piercing at the lowest point, the heifer being raised to her chest. The superior surface of the uterus was then incised for about a foot along the long axis and the patient replaced on her side. The calf was easily lifted out and the placenta was detached and removed. The interior of the uterus was swabbed dry and the wound closed. Ovariotomy was performed by speying chain écraseur. The muscles were sutured as one layer. In closing the skin wound a drainage opening was left at the lower extremity. The wound was covered with sterile towels and the patient rugged.

Recovery was uneventful. Uterine massage per rectum was adopted and the patient was discharged on the seventh day, dressings being continued by the owner. The heifer fattened and was used for calf rearing.

Extensive notes are given of the materials, sutures, etc., used, and it is pointed out that the operation was conducted with the assistance of one man.

The author adds a note suggesting that such constrictions are variations of white-heifer disease and also suggesting the possibility of heredity in their occurrence.

J. B.

* * * * *

["DROP" (OR PSOAS PARALYSIS?) IN CATTLE. Watson, W. B. (1940.) *Vet. J.* **96.** 162-164.]

A type of paralysis occurring in pregnant or recently calved cows is described in which the animal is unable to rise but inability is most marked in the hind limbs,

A fairly constant feature is the presence of a large, circular, painful, oedematous swelling which may appear anywhere over the back of the animal, but is usually over the lumbar region. The paralysis may affect recently calved cows, when it is accompanied or followed by milk fever, in cows which are due to calve, premature parturition commonly following this type, or in cows in the early stages of pregnancy.

Treatment consists of the administration of purgatives followed by stimulants and the application of liniments to the patch of oedema.

The author suggests toxic action as a cause of the oedematous swelling and that the paralysis is caused by pressure of this latter on the lumbar nerves supplying the psoas muscles. [Since the pressure or toxic action would have to be transmitted through thick muscle and bone to reach these lumbar nerves this possibility seems very remote].

J. W. D.

REPORT

[BENGAL: REPORT OF THE CIVIL VETERINARY DEPARTMENT AND OF THE VETERINARY COLLEGE FOR THE YEAR 1937-38. (High Commissioner for India, India Office, Aldwych, W.C.2. Price 7d.).]

Civil Veterinary Department (S. M. Ali).—The staff consisted of one Director, one Deputy Director, one Superintendent in charge of the Veterinary Vaccine Section, one Disease Investigation Officer, three Assistant Directors, eleven Veterinary Inspectors and 158 Veterinary Assistant Surgeons. It is reported that there was increased efficiency in the control of diseases of stock and the total mortality was less than in the previous year. Rinderpest and haemorrhagic septicaemia were prevalent but mortality from anthrax was less than in the previous year. Surra was detected in the Dacca district causing a loss of 98 animals and glanders in five districts. It is indicated in the report that vaccination against rinderpest with goat tissue vaccine caused reactions which proved fatal in some localities and the method was suspended, serum inoculation being adopted instead.

There was a large increase in the number of cases treated by Veterinary Assistant Surgeons on tour. There were 50 Veterinary Dispensaries at work. The Disease Investigation Officer was occupied in the investigation of bovine contagious abortion and bovine lymphangitis (amongst other prevalent diseases) and a survey of the diseases of sheep and goats.

Bengal Veterinary College (A. D. MacGregor).—In addition to his duties as Principal, Mr. MacGregor acted as Veterinary Adviser to the Government of Bengal. There was an increasing demand for admission to the College and the number under instruction was 210. Students come from all parts of India and from neighbouring countries. The majority are Bengalis. The College equipment is being improved in several directions and the increase of admissions to the hospital is very satisfactory.

The Raymond Research Laboratory and the Department of Epizootic Diseases of Animals in Calcutta, which are under the control of the Principal of the College, continued their usefulness.

G. K. W.

IN PARLIAMENT

New Tuberculin Discussed in the Lords

Lord Cranworth, speaking in the House of Lords on the Government's Agriculture (Miscellaneous Provisions) No. 2 Bill, said the Ministry had introduced a new kind of tuberculin for testing purposes. It was very much more drastic than that which was used before, and herds which for years had no reactors found themselves under the new tuberculin test with a great many reactors.

There were many people who were somewhat sceptical of the double intradermal test, but there had been assurances that the highest veterinary authorities were thoroughly satisfied with the double intradermal test and with the tuberculin which they have used.

This did seem to be an unfortunate time to bring in a new and stiffer test, for it was a time when farmers were having the greatest difficulty in keeping their herds free, because they have less grass and there were various other difficulties.

" I am afraid," said Lord Cranworth, " that the use of the new tuberculin will mean that there will be many fewer attested herds in the future than there are now. I would like to urge, therefore, that a return be made to the old tuberculin until the end of the war, and then let the subject be studied anew."

Lord Moyne (Joint Parliamentary Secretary) said the new tuberculin was undoubtedly more potent in producing a reaction than that which used to come from Camden Town or from the Department of Agriculture in Cambridge. This trouble, however, did exist in a similar form even before Weybridge took over.

Hitherto the test had not distinguished between the objectionable bovine infection and the harmless avian infection, but in future it was proposed to have, at the expense of the scheme, a simultaneous intradermal injection of bovine and avian reagents and compare the effects.

If there was a much bigger reaction from the bovine, it would be accepted that the animal was a reactor to bovine tuberculosis. If, however, the avian outstripped the bovine in the size of the intradermal reaction, then the animal will be passed as safe.

. . . . .

Parliament rose for a brief Recess on Thursday of last week. Among the questions and answers recorded in the Commons prior to the adjournment till Thursday, September 5th, were the following:—

Horse Transport

Lieut.-Colonel Sir Thomas Moore asked the Minister of Transport whether, in view of the desirability of reducing as far as possible during the war the employment of transport which consumes petrol, he will consider the advisability of setting up an inquiry into the possibilities of extending the use of horse transport in all cases where economy rather than speed is the primary consideration; and whether he has taken any steps since hostilities began to encourage maintenance of, or reversion to, horse transport with the object of economising important fuel?

Sir J. Reith: I entirely sympathise with the suggestion, but I hardly think an inquiry is necessary. The rationing of liquid fuel is in itself an incentive to the maximum use of horse transport. It should be remembered that any substantial increase would involve importation of horses and increased demand for feeding stuffs, which are already in short supply.

Major Sir Jocelyn Lucas: Is the Minister aware that light horses are cheap and cannot be given away?

. . . . .

Milk

Mr. R. Morgan asked the Minister of Agriculture whether he is aware of the deterioration of the quality of milk in general throughout the country during recent

months, and that in many cases farmers are receiving a bonus for accredited milk which is not up to the quality of ordinary milk; and whether, in view of the fact that this deterioration is, to a large extent, due to a lack of adequate inspection, he will take steps to increase the efficiency of such inspection at the earliest opportunity?

Mr. Hudson: The reply to the first part of the Question is in the negative; the second part does not, therefore, arise.

. . . . .

Milk (Producer-Retailers)

Mr. Ross Taylor asked the Minister of Agriculture the reduction in the number of producer-retailers of milk during the past 18 months; and whether, in view of the fact that such producer-retailers are going out of business because of the amount of clerical work involved in keeping the records and making the returns now required of them, he will take steps to ensure that such work is rendered less onerous by simplifying the procedure?

Mr. Boothby: There has been a reduction in the number of producer-retailers of milk during the past 18 months of 1,736 (2·8 per cent.) but I have no evidence to show that this reduction has been caused by the clerical work involved in keeping records and making returns. The reduction in the number of producer-retailer licences is due in the main to the sale of businesses but is accounted for to some extent by producer-retailers entering into contracts for the sale of milk through the Milk Marketing Board instead of direct to consumers. The quantity of milk sold by producer-retailers in July, 1940, was over one million gallons more than the quantity sold in July, 1939.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Sept. 2nd.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

* * * * *

National A.R.P. for Animals Committee

Livestock Casualties in Recent Air Raids

The recent period of intensive raiding from the air has provided many tests of the A.R.P. services for animals in both urban and rural areas, and it is evident from reports received that the organisation is carrying out its functions with promptitude and efficiency. A satisfactory feature of the service is the high proportion of injured animals that have responded to treatment and the number of carcases salvaged. While it is not possible to give detailed figures it can be said that the toll of casualties is not great when the number of bombs dropped over such extensive and well-stocked areas is considered. The majority of casualties have occurred in the open; cattle and sheep have suffered the most severely, but some casualties have occurred among pigs, horses, dogs and cats.

The Government has not as yet made any specific pronouncement as to compensation for livestock injured or killed by enemy action, but it is presumed that farmers may claim for their losses. As it is improbable that claims will be considered until the end of the war, it becomes imperative to secure maximum salvage and thereby enable the farmer to obtain some immediate reparation for the loss sustained. Should any scheme of compensation eventually be forthcoming, the data as to casualty figures and values entered by the veterinary officer on his casualty report form—the original of which is retained by the farmer—will support any claims made. Admirable work is being done by means of the first-aid and salvage organisation set up by the Committee in conjunction with the National Farmers' Union and the Ministry of Food. The veterinary officer gives all initial first-aid to livestock free, but where further treatment is essential it is advised that the owner's private practitioner be called in.

High explosive has been responsible for most of the damage, and groups of stock have been wiped out, beyond possibility of salvage; thanks, however, to the prompt arrival of the "mobile unit" salvaging operations have often been possible.

In regard to small animals in urban areas, the number of casualties so far reported has not been very considerable, but here again the services of N.A.R.P.A.C. personnel have often proved invaluable: in one instance over 200 dogs, cats and birds were released from a badly damaged building, while after any raid of an extensive nature a number of strayed animals have been secured and restored to their owners. The release of horses under circumstances of danger and difficulty also stands to the credit of N.A.R.P.A.C. workers.

During the course of many attacks on this country a large number of delayed action bombs have been dropped in both rural and urban areas. Veterinary surgeons are advised to instruct farmers to herd their cattle away from sites suspected of containing these delayed action bombs and take steps to keep them away until danger is past.

. . . . .

Reserve Petrol Ration: An Urgent Request

Divisional Veterinary Officers are urgently requested to obtain details of the cars which are likely to be used on behalf of N.A.R.P.A.C. at times of emergency, giving the names of the owners and, where possible, their N.A.R.P.A.C. identity card number Unless this request is complied with immediately it will be very difficult to supply veterinary officers with the emergency ration.

Lists of owners of cars in their division should be sent to the County Veterinary Officer; the County Veterinary Officer should send a request to his N.A.R.P.A.C. Petrol Liaison Officer for the number of sealed envelopes containing petrol vouchers which he requires and the latter will then be in a position to ask for the necessary number of envelopes for the whole of his area from the Divisional Petroleum Officer of the Ministry of Mines.

Unless all veterinary officers assist in the collection of the information required it is impossible for the N.A.R.P.A.C. Petrol Liaison Officer to arrange for the proper issue of these sealed envelopes. When the Liaison Officer receives his sealed envelopes from the Ministry of Mines, he can issue these, if he so desires, through every Divisional Veterinary Officer, thereby saving a great deal of clerical labour, veterinary officers being ultimately responsible for the issue of envelopes to personnel in their divisions. It must be clearly understood, however, that no communications concerning these "iron rations" of petrol vouchers should be made to the Divisional Petroleum Officer.

Owners of lorries and other commercial vehicles will secure their supplies of petrol in the normal way through the Ministry of Transport.

PERSONAL

Appointment.—Mr. Wm. Grant, M.R.C.V.S., D.V.S.M., who has been First Assistant Veterinary Inspector at Essex for some time under the Ministry of Agriculture, has been promoted to be the Ministry's Divisional Inspector for Dumbartonshire and Stirlingshire.

* * * * *

Birth.—Buxton.—On August 19th, 1940, to Margaret Joan, wife of J. C. Buxton, 165, Waterpark Road, Birkenhead, a daughter.

* * * * *

R.C.V.S. OBITUARY

The Late Mr. R. L. Cornell, B.Sc., M.R.C.V.S.

An Appreciation (*Contributed*).

We are indebted to a member of the profession intimately acquainted with Mr. R. L. Cornell, B.Sc., M.R.C.V.S., whose death at Bangkok, Thailand, on August 4th, was recorded in our last issue, for the following account of his career and tribute to his worth.

The sad news of the passing of Mr. R. L. Cornell at a comparatively early age will be received with regret and sorrow by all of his former colleagues.

The younger son of Mr. William Cornell of Ipswich, he was attracted at an early age to the veterinary profession. His studies were interrupted by the last war, during which he was attached to the R.A.V.C. in Egypt. There can be no doubt that the insight into animal diseases under tropical conditions which he gained during this period left an indelible impression on his mind and led to his ultimate return to the East. After the war he was a pupil of Mr. H. L. Roberts of Ipswich, and subsequently completed his course at the Royal Veterinary College, London. He qualified in July, 1922, and in the same year gained the London University degree of B.Sc. (Vet. Science).

For a short time he enlarged his knowledge in the laboratory of Sir J. M'Fadyean, where, in addition to active participation in the current investigations, he was demonstrator in Pathology to the Class "C" students. It was inevitable that his merits as a promising research worker should soon attract attention and in 1924 he was offered a post by Professor J. B. Buxton at the newly created Institute of Animal Pathology in Cambridge, where he remained until 1928. Here he was placed in charged of the diagnosis department which was being built up to meet the demands of practitioners in all parts of the country and particularly in the Eastern Counties. In this capacity he was outstandingly successful and impressed those with whom he came in contact by the meticulous care which he brought to bear on the many problems which he encountered. In spite of the pressing claims of his routine work he found time for important original researches and published papers on streptococcal infection in lambs, tuberculosis in swine (with Dr. A. S. Griffith), endocarditis in the pig, etc. His published articles, however, represented but a small part of his activities, since much of his time was taken up in assisting his colleagues at the Institute who were constantly indebted to him for his helpful and unselfish collaboration.

In 1928, the urge to return to the East became too strong, and when invited by Mr. H. E. Hornby to join the research staff at Mpwapwa, Tanganyika Territory, as veterinary research officer, he decided, much to the regret of his friends at the Institute, to accept the post. During the succeeding six years he was fully occupied both at the central station at Mpwapwa and in the field in the elucidation of many problems in the control of disease. For example, he worked with Hornby and Evans on the active immunisation of cattle against rinderpest. Later he became interested in tuberculosis in native cattle and published a highly interesting article on the incidence of the disease in Zebu cattle in its relation to tuberculosis in the native population. During his infrequent visits to this country on leave, he spent much time in visiting various laboratories, and it is typical of his devotion to his work that he invariably endeavoured to round off some investigation in which he was interested. His most recent publication, completed during a stay in Cambridge, was concerned with the classification of certain strains of Corynebacterium isolated from ruminants in East Africa.

His service in East Africa terminated five years ago when he was asked to fill a position as veterinary adviser to the Department of Agriculture in Thailand. This fresh post called for the display of considerable tact and initiative but his past experience was invaluable to him at this juncture. He was beset with many difficulties, not the least of which was the absence of an adequately trained subordinate staff. He threw himself into his new tasks with energy and recently expressed his satisfaction at the progress he was making. Doubtless the numerous long journeys he was compelled to take overtaxed his strength. His untimely death has cut short a career which had already fulfilled his early promise and had he been spared he would undoubtedly have left his mark on Tropical Veterinary Science.

Throughout his life Cornell was an ardent amateur photographer and his artistic studies of tropical fauna were a perpetual source of interest to his friends. In the laboratory, his quiet disposition and accurate work made him a delightful colleague, while his high sense of loyalty provided an inspiration to all with whom he came in contact. The veterinary profession is the poorer by the loss of one whose sure faith in the usefulness of his calling was the spur to fine achievement in its service.

* * * * *

LEGAL NOTES

Air-raids Factor in Milk Deficiency Case.—The defence that cows are affected by air raids was successfully pleaded at Barry, Glamorgan, on Friday of last week, when a summons against Charles James, of Barry, for offering for sale milk alleged to be 13 per cent. deficient in butter fat was dismissed.

At a previous hearing Mr. James submitted that the dropping of bombs near his farm so affected his cows as to account for the deficiency.

Miss Elizabeth Bowen, dairy instructress of Glamorgan Agricultural Committee, told the Bench that on the morning after another raid she attended Mr. James's farm and found that only four of the 21 cows from which she took individual samples gave the presumptive standard of butter fat content. Recently she had taken samples at another farm after a raid, and nine out of the 15 cows gave milk below the standard.

Answering Mr. Clifford Walter, the county prosecutor, Miss Bowen said the individual analysis of the cows proved that, like human beings, some were prone to be more affected by strange happenings than others.

Miss Ward gave evidence that the cows were nervy and jumpy on the morning after the first raid, and she remarked in the cowshed that the cows were "down." After another raid she had found the same reaction in the cows.

Mr. S. T. Blewett, who defended, drew what he described as the well-known analogy of a nursing mother being upset by fright, and said it was general knowledge that in consequence the quality of the child's food suffered. He added that Mr. James had been an expert in milk production for 50 years.

* * * * *

Ministry's Leaflet on Diseases of Dairy Cows.—The Ministry of Agriculture's new Growmore leaflet, No. 23, "Diseases of Dairy Cows" (free on application to the Ministry at Hotel Lindum, St. Annes, Lytham St. Annes, Lancs.), deals with the steps that can be taken by the owner to assist the veterinarian in the control or eradication from his herd of three of the major diseases of cattle: tuberculosis, contagious abortion and mastitis. It covers recognition and control of the diseases and preventive treatment.

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